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# OPPORTUNITY FOR VETERANS

AS mail comes across our desk these days from pharmacist-veterans at the world's outposts, we gain the impression that an unexpectedly large number may return to open their own pharmacies.

There was sound reasoning behind the resolution adopted by the last joint session of the A. PH. A. and N. A. R. D. executive groups. It asked that pharmacists "make every effort to so improve salaries to registered personnel and to maintain those hours and working conditions which will make employment in existing drugstores so attractive that pharmacists returning from the armed services will seek employment in existing drugstores rather than open establishments of their own."

Two obvious facts were cited to back up this request: (1) There is no valid need or justification for opening an abnormally large number of drugstores in the postwar years. (2) Experience has amply shown that too many drugstores lead to a lowering of professional standards and unsound economic practices.

Even today no apparent shortage of retail pharmacies exists, except in the smaller communities where war has forced shut the pharmacist's doors. Since there are only about 5 pharmacists for every 4 pharmacies, on the average, present personnel can in no wise adequately man present facilities.

But how many competent young pharmacists will return voluntarily to prewar conditions of employment? In Congress and industry they hear talk of a maximum work week of thirty-six hours. They see unionized labor often topping their salary and asking for more.

If returning pharmacists, armed with the G.I. Bill of Rights, set up a practice of their own, economic disaster and professional disappointment may result unless the home-front pharmacist and the veteran can get together on several important points.

Prior to the war there were about 13,600 pharmacists in practice over fifty-five years of age—more than 17% of the nation's pharmacists. It is quite probable that meanwhile this figure has increased, since fewer pharmacists retired because of advanced age during the war years.

These elder pharmacists well might welcome an enterprising veteran into full-fledged partnership. Here is an opportunity for successful merger of experience and enthusiasm, for a sharing of responsibilities and rewards, for a division of labor that will make life seem more worth while.

In other instances older pharmacists are ready to retire. Wherever possible, the veteran should buy a pharmacy already established. Chances of success will be increased. Needless competition for the same pharmaceutical practice will be avoided. To escape the traditional tyranny of the one-man pharmacy, two congenial veterans may pool their resources in such an enterprise.

Then the veteran asks: Where are the men who want to share their responsibilities with partners? If I want to open a new pharmacy or buy an established one, what communities in my state have a real need for pharmaceutical service? Where can I get advice?

First, contact the A. PH. A.'s Committee on War Activities and Veterans' Affairs through the Washington headquarters. Secondly, contact the state pharmaceutical association where you plan to practice.

There is an urgent need for adequate surveys by state associations to enable them to guide veterans to areas of least competition. Veterans will rightfully expect every state to have an active bureau from which they can obtain dependable advice and learn of opportunities.

For years many in the profession have decried the maldistribution of pharmacies—a situation where city pharmacists compete on every other block while many rural areas go begging for pharmaceutical service. Thousands of pharmacist-veterans, looking for a new foothold in the profession, offer a unique opportunity to correct this deficiency voluntarily. If the veteran and home-front pharmacist will play ball we may see a triple play that will improve pharmacy's service to the public, better conditions in the profession and give veterans a chance to practice successfully the kind of pharmacy for which they were trained.

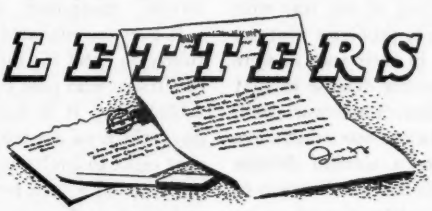
## PLAUDITS FOR A. PH. A. FROM OVERSEAS

Sirs:

I just wish to add my name to scores of those who must have welcomed the article by Dr. Fischelis in the May issue of the JOURNAL. The lessening of the requirements for pharmaceutical education is one of the greatest evils that true pharmacy must fight. If such a thing were brought about it would jeopardize the recognition that pharmacy is at last securing. Surely those who are arguing for this do not hold pharmacy in the esteem that so many of us do; and in that case their arguments are groundless. Surely they have not formed their opinion by talking with the veteran. I have yet to find one (pharmacist or student) who sincerely thought the present standards should be lessened.

I know there are many (and contrary to some opinions these are mostly in the armed forces) who feel as I. Speaking for myself and them it's good to know there is an organization like the A. PH. A. pulling for pharmacy. For in so doing they are pulling for us, too. We don't want a pharmaceutical education handed to us in the form of a two-year sheepskin—we just want the opportunity to rightfully earn it as our fathers did. Keep up the good work and know its not being done without our appreciation.

CHARLES MURPHY, PhM2c USNR
F. P. O., New York, N. Y.
formerly sophomore,
Louisville College of Pharmacy




Sirs:

I am a registered pharmacist and A. PH. A. member. I am writing this in regard to the article "Give the Veteran His Due" by Dr. Fischelis which appeared in the JOURNAL. When the clipping first arrived from home I read it casually, but upon reading it again I begin to grasp the significance of it. . .

Your forceful article will show those who wish to give a pharmacist's license to veterans with slight medical training that pharmacy is not to be dealt with so lightly. If the people themselves realized that their health would be jeopardized by placing inexperienced persons in the profession, I doubt that such proposals would be considered.

Personally I hope the states will not recognize the scant pharmaceutical training offered by the armed forces. In fairness to all, the standards of the profession should not be lowered—even for homecoming veterans. Such a lowering would only tend to remove pharmacy from alongside medicine.

Some registered pharmacists, upon returning to civilian life, may need refresher courses to bolster their training, but half-trained servicemen will not so benefit. You can't bolster something that did not exist. . .

U. S. S. Dayton W. F. GRADY, HA 2/c

Sirs:

I am still in uniform but hope to become a civilian in the near future and also the proprietor of my own pharmacy. I was very much interested in the data provided by your publication, "The Professional Pharmacy."

When I actively engage in the profession once more, I would like to add my name to the list of members in the A. PH. A. For the time being, thanks very much for all the good work that you have been doing to further the cause of professional pharmacy. We in the service appreciate it more than you know.

T/4 RUSSEL A. BENEDICT
Prisoner of War Camp
Fredonia, Wisconsin

*A. Ph. A.'s thanks to these and other servicemen who have approved its efforts. Views from veterans are welcome guidance for Association committees at work on postwar problems.*—Ed.

## CANADIAN PHARMACISTS JOIN ANTI-VD FIGHT

Sirs:

As co-sponsor with the Canadian Pharmaceutical Association of a druggists' anti-VD campaign last May, we were very much interested and impressed with the report by Mr. Blake Cabot in the May issue of your JOURNAL, on the American pharmacists' participation in the 1945 social hygiene campaign.

To supplement the material in the *Canadian Pharmaceutical Journal*, I am sending you a few items in which you might be interested in connection with Canada's first effort in a pharmacy anti-VD campaign on a national scale.

I am writing also the American Social Hygiene Association in connection with their effort in your joint campaign.

I was also considerably impressed with the showing that your ASSOCIATION made in National Pharmacy Week.

With best wishes for all your future public health activities.

Social Hygiene Division J. LICHSTEIN
Health League of Canada Acting Director
Toronto, Canada

# STRAIGHT FROM HEADQUARTERS

by ROBERT P. FISCHELIS, Secretary
AMERICAN PHARMACEUTICAL ASSOCIATION

THE fortunate early ending of the war with Japan has brought with it problems that are just as critical and urgent in their way as were the problems of mobilization for defense in 1941 and the vigorous prosecution of the war itself. In swift array there pass before our mind's eye the early effort to prepare a civilian defense against air and gas attacks, the mobilization of of men and women for a variety of services by the Office of Civilian Defense, the American Red Cross, the War Manpower Commission, the Office of Price Administration and other agencies.

We lined up voluntarily to register for the draft, for rationing, and for inspections of one kind or another. Men and women shifted their jobs and their homes. Some took on extra activities and worked more hours and more days.

The incentive for all of this was the common defense. We saw a tremendous demonstration of the cooperative power of the people of the United States once they are aroused to the necessity of uniting to achieve a common objective.

Many will feel that with the actual fighting over, we can now relax and go about our private affairs without too much attention to the common welfare. This is a dangerous attitude. Undue relaxation before the peace has been definitely won may cost us much of the fruit of our labors and sacrifices. United and cooperative effort is still required to finish the job.

Just as in 1941 the pharmacist was in a strategic position to aid in the mobilization for war, so he is now in a favorable position to be of help in the reconversion and demobilization period. Above all it is necessary for him to keep well informed as to the policies and plans of the government. It is still important to curb loose tongues and to reassure those who may become panicky about jobs, failure of immediate release of relatives from military duty, and the immediate effects of the relaxation of strict controls over materials, manpower and commodity prices.

If ever the educated pharmacist had an opportunity to exert his influence over the thousands of citizens who pass through the doors of his establishment, it is today and in the uncertain days which we are told must be faced within the next eight to twelve months.

Pharmacy's own house must be put in order and efforts to do so must be coordinated. Leadership must be unselfish and progressive. Public relations should be coordinated and plans of action should be well thought out. First things must be attended to first, and we must never lose sight of the fact that the one thing that sets us apart from merchants is the professional service for which the state grants us an exclusive license, based upon demonstrated technical competence and the ability to assume responsibility in matters of life and death.

Specifically, we are confronted with several problems of immediate importance.

## I

Recruiting the ranks of pharmacy requires careful measurement of the influence of 10,000 returning pharmacist-veterans upon the supply and demand of this class of professional manpower. Nobody knows right now to what extent the return of these men will influence the necessary replacement of tired and over-aged pharmacists, the opening of new pharmacies, the hours of work and rate of pay adjusted in favor of employed pharmacists during the war, and the extent to which war veterans will want to use their educational privileges before returning to their prewar activities.

In addition to the registered pharmacists in the Army, there are also students who have completed a part of the course and there are young men who expect to enter the pharmacy course.

These, together with students now in the colleges of pharmacy and men in actual practice who are under twenty-six years of age, present a number of problems which are now receiving attention.

It is too early to say exactly what the procedure will be to retain members of each of these groups in the pharmacal manpower pool. Much will depend upon the action of Congress with respect to Selective Service.

If the Selective Service Act is abolished when Congress meets again in September, no further action will be necessary. However, it is not likely that we will be able to raise the standing Army required for postwar protection on a volunteer basis, and the President has already indicated that Selective Service must be continued. Accordingly, the Committee on War Activities and Veterans' Affairs of the A. PH. A. has united with representatives of the National Research Council and the American Council on Education to present to the President, through the Director of War Mobilization and Reconversion, a plan which calls for deferring pharmacists already enrolled in colleges of pharmacy and authorizing each college to certify for deferment from those enrolled in the institution prior to their eighteenth birthday, a number of men equal to the number who graduated from that institution during the academic year 1939–40. The deferment of such numbers, plus returned veterans, women, and men who are disqualified for military duty, is expected to give us a satisfactory enrollment. The time may come when pharmaceutical associations and others will have to urge such a program upon Congress.

## II

Men and women who served in the armed forces have acquired certain information on disease prevention and cure. They will carry this knowledge into their daily lives as civilians and our professional relations with them must take such knowledge into account.

A large number of civilians have taken courses in first aid under Red Cross auspices and many have acquired that "little knowledge" which has been characterized as a dangerous thing. Other men and women who have worked in war industries have received "health instruction" which has made them increasingly health conscious.

All this will be reflected in their dealings with pharmacists, physicians, nurses and fellow citizens. We must certainly know what they have been taught and what they have learned and build upon that knowledge. They will not be satisfied with shoddy health supplies or inferior service. Therefore, it should not be difficult to convince them that the protection which the state provides by licensing pharmacists and pharmacies is necessary for their welfare. This is the answer to promoters who are urging drug manufacturers to look to unlicensed and untrained storekeepers as distributors of pharmaceuticals.

In the matter of health protection for the people versus increased sales volume for unregulated merchandise distributors, the public will have no difficulty in determining where its interests lie—if facts are properly presented.

## III

New drugs, such as streptomycin and tyrothricin, and the availability of powerful insecticides, such as dichlorodiphenyl-trichloroethane (DDT), present new problems of distribution. Without doubt, DDT is a poison. The extent to which its toxic effects may affect human beings is being studied and the labeling of the product with adequate warnings or as a poison will determine to a large extent whether or not its distribution is to be confined to pharmacies.

Certainly, new and powerful drugs can be distributed only through pharmacies as long as they are prescription products or if they are characterized as poisonous or dangerous.

There will be differences of opinion on this question of distribution. Certain groups within the drug industry will advocate free and general distribution to any type of outlet, and they will stigmatize efforts to assure protection of the public against harmful effects from these drugs and insecticides as selfish propaganda. This should not deter anyone from viewing the problem strictly from the viewpoint of the public health and welfare, and public officials will make their decisions on that basis. The public itself will soon learn to distinguish between our interest in them and in ourselves, but we must counteract the propaganda for profit with factual data on the need for health protection in each instance.

We are living at a time when the disintegration of the forces which have served to keep this nation healthy throughout the war years would be a distinct setback in any national health program. Conferences which led to cooperation during the war years should yield the same result now. There is urgent need for a meeting of minds, a clarification of objectives and the exercise of sound statesmanship in the profession.

# PRACTICAL GUIDE TO NEW FDA LABELING REGULATIONS

ON October 10 far-reaching changes in drug labeling regulations of the Food and Drug Administration become effective. Here, for quick reference, are answers to the important and practical questions that may arise in retail dispensing concerning the new provisions. A detailed analysis of the regulation itself has been presented previously in THIS JOURNAL (1:2, 1945) and elsewhere.

Under regulations governing drug labeling for the past four years manufacturers could decide for themselves, in most instances, whether or not to label products for prescription use only. For dangerous drugs the prescription legend was, of course, mandatory.

This freedom of choice eventually led to indiscriminate use of the prescription legend by many firms. Meanwhile, both laymen and physicians were requesting harmless remedies for patients without a prescription, although the drug label was often devoid of directions and bore the legend. Thus pharmacists were confronted with the alternative of frequently dispensing drugs in violation of the law or attempting the difficult task of devising labels to replace those of the manufacturer.

This situation was forcefully brought to the attention of the Food and Drug Administration by the AMERICAN PHARMACEUTICAL ASSOCIATION, National Association of Retail Druggists and other pharmaceutical groups. Surveys conducted by the FDA confirmed that this misuse of the regulations was not in the public interest, and the revised labeling requirements were subsequently issued.

### DRUGS LIMITED TO PRESCRIPTIONS

In the retail pharmacy the primary effect of the new regulations under Section 502 (f) (1) of the Act will be to divide medicinal products into two definite classes: (1) those for use only on prescription and (2) those that may be dispensed over the counter.

Drugs for prescription use only are those not safe or efficacious when used by the laity or not having established therapeutic value. FDA will insist that the legend be restricted to these categories. An exception is official bulk drugs intended for use in compounding.

Ambiguous cautionary legends are not permitted. Restricted drugs are marked: "Caution: To be dispensed only by or on the prescription of...." First failure to observe this caution is punishable by fine up to $1000 and/or imprisonment up to a year.

### DRUGS WITHOUT PRESCRIPTION

Drugs labeled by the manufacturer without the prescription legend may be sold over the counter. To supply "adequate directions" is the responsibility of the manufacturer.

Under certain circumstances adequate directions are not required. The principal exceptions —which will not complicate retail practice—are: (1) drugs intended for manufacturing purposes, not including prescription compounding; (2) drugs sold by the manufacturer direct to physicians, dentists and veterinarians; (3) inactive drugs, such as coloring, flavoring, solvent and similar pharmaceutical necessities.

*Exception to Requirement of Adequate Directions.*—There is one group of drugs and devices that may be dispensed in the retail pharmacy without either adequate directions or prescription: household remedies for which adequate directions, with respect to common uses, are known by the ordinary individual. This group will be small. Examples are smelling salts, petrolatum, rubbing alcohol and eye cups.

In a few instances common remedies may require directions but be exempted from listing indications; others, such as tincture of iodine, may not need directions but require a warning.

### PRESCRIPTION DRUGS WHICH BEAR DIRECTIONS FOR USE

Directions on or to accompany a new prescription drug may be permitted by FDA if the medi-

cal profession has not yet become thoroughly familiar with the product. The prescription legend is your dispensing guide.

Injectable products must also bear adequate directions since a survey by FDA indicated that such information is needed by physicians. Injectable products may or may not carry the prescription legend. Apparently because there is little likelihood that ampuls would be dispensed over the counter, the legend is not mandatory.

#### LABELING AND DISPENSING IN ABSENCE OF CONSENSUS ON SUITABILITY FOR LAY USE

When FDA agrees with the manufacturer that present scientific opinion leaves the status of a drug in doubt, the manufacturer chooses the type of labeling he prefers. Use of the prescription legend will be encouraged where doubt exists as to safety for lay use.

This may lead to a few instances in which different brands of similar products will bear different types of labels. Such products will be for prescription or over-the-counter use depending on which brand is stocked. You are obligated to observe the prescription legend when present.

Exempt narcotics, for example, are drugs on which the experts are not in general agreement. If some manufacturers wish to mark these for prescription only, FDA probably will not object.

#### PRODUCTS THAT CAN BE USED PROPERLY BY LAITY FOR SOME INDICATIONS BUT NOT FOR OTHERS

Two types of uses—lay and professional—do not justify the prescription legend. The manufacturer is expected to give adequate directions, including indications, for legitimate lay uses followed by a statement that other types of use must be under the direction of a physician. The pharmacist has an ethical responsibility to withhold such drugs from self-medication if he has reason to believe that the intended use requires medical supervision.

#### DRUGS INACTIVE OR OF QUESTIONABLE VALUE

Some products apparently safe for lay use are labeled with the prescription legend. These cannot be used *efficaciously* by the layman—some because of method of use required; others because they are of questionable value. The latter class must bear a disclaimer to the effect that there is no known physiological action.

When scientific investigation has definitely shown that a drug cannot be effective therapeutically, it will be open to prosecution by FDA whether labeled for professional or lay use. For drugs of questionable activity, the FDA takes the position that they cannot be used efficaciously by the layman but will permit prescription use by physicians who believe that such drugs can be used to advantage. Examples of these are some of the botanicals and desiccated animal tissues which have been discarded by most practitioners.

#### RESPONSIBILITY FOR DRUGS IN STOCK ON OCTOBER 10 LABELED UNDER OLD REGULATIONS

FDA gives assurance that stock labeled under the old regulations may be dispensed without being liable to prosecution provided prescription-use cautions are observed. Drugs marked with the prescription legend, but which will bear adequate directions hereafter, must not be dispensed over the counter without relabeling.

Own-labels on hand October 10, prepared under the old regulations, may be used up provided that therapeutic indications have been included.

#### RECOURSE IN CASE OF UNJUSTIFIED Rx LEGEND

The manufacturer alone is responsible for the correctness of his labels. The dispensing pharmacist has the responsibility of observing any cautionary legend. If you believe that a product is being restricted unjustifiably to prescription use, however, ask the FDA for an investigation. Such queries may either be submitted directly or through your state or national pharmaceutical association. Send the name of the product, its composition and the manufacturer's name and address to: (1) The AMERICAN PHARMACEUTICAL ASSOCIATION, 2215 Constitution Ave., N. W., Washington 7, D. C., or (2) The Food and Drug Administration, Federal Security Agency, Washington 25, D. C.

Should the product prove to be safe and efficacious and meet other requirements for lay use, FDA promises action on behalf of retail pharmacists and the public.

#### USE OF OWN-LABELS

When drugs that have been in interstate commerce are repackaged under you own label, you must comply with the Federal law and regulations. Is the retail pharmacist subject to FDA regulation when he makes a preparation from two or more ingredients that have been in interstate commerce? This recurring question has not yet been settled by the courts. Undoubtedly

FDA would prosecute should such products be found which would endanger the safety of the public.

Pharmacists who dispense own-label products should of course be thoroughly familiar with both Federal and state laws.

When "own labels" are purchased from a firm* specializing in this service, assurance should be secured that Federal requirements have been met. Responsibility for compliance rests with the pharmacist. When devising your own labels useful information may be obtained from model labels or those already legally in commerce. Before printing, proofs may be submitted to the Food and Drug Administration for review and suggestions.

As in the past, "adequate directions" on drug labels include:

1. Directions for use in all conditions recommended or suggested in labeling or advertising, or in any other conditions for which the drug is commonly and effectively used. In general FDA now takes the position that *therapeutic indications* for use must appear *on the label or labeling*.
2. Dose, including quantities for persons of different ages and different physical conditions.
3. Frequency of administration or application.
4. Duration of administration or application.
5. Time of administration or application (in relation to time of meals, time of onset of symptoms or other time factor).
6. Route or method of administration or application; or
7. Preparation for use (shaking, dilution, adjustment of temperature or other manipulation or process).

The label must also contain the name and address of the pharmacist, accurate statement of net contents, warnings where required and the name of the drug. For unofficial preparations a list of ingredients must be included and for certain ingredients also the quantity.

The Act and its regulations must of course be consulted for detailed instructions on labeling. In this discussion guideposts have been set up for the retail pharmacist which lead to compliance and indicate the scope of the new labeling regulations.

* Two such label suppliers are the Pictorial Paper Package Corporation, Aurora, Ill., and Drug Package Inc., 2419 Glasgow Ave., St. Louis 6, Mo.

## PUERTO RICAN PHARMACISTS HEAR A. PH. A. PRESIDENT

Dr. George A. Moulton, president of the AMERICAN PHARMACEUTICAL ASSOCIATION, addressed a meeting of Puerto Rican pharmacists in San Juan on September 1 at the invitation of the College of Pharmacists of Puerto Rico.

Pointing out the importance of state associations in the A. PH. A. organization, Dr. Moulton announced that "in view of your accomplishments in the pharmaceutical field in Puerto Rico, it will be my pleasure to recommend to the Council and to the General Sessions of the AMERICAN PHARMACEUTICAL ASSOCIATION that the bylaws be amended to provide territorial as well as state representation. I look forward to welcoming a delegate from your organization to our House of Delegates at the next annual convention."

Puerto Rican pharmacists were also invited to join with the joint committee of the A. PH. A. and American Social Hygiene Association in promoting Social Hygiene Day and the campaign against venereal diseases.

The A. PH. A. president reviewed other public health activities of the ASSOCIATION pertaining to retail practice, and referred to surveys which will establish a basis for more adequate regulation of the sale and dispensing of certain drugs.

"I hope that we, as pharmacists," he said, "will never become careless in the handling of drugs, medicines and poisons because the more we impress the public with their dangerous nature and the necessity for careful and skillful handling of these powerful agents, the less impressive will become the claims of merchants that anyone is competent to dispense a packaged remedy."

As a memento honoring the occasion of the A. PH. A. president's visit to Puerto Rico, the pharmacists were presented with a gavel inscribed, "To the Colegio de Farmaceuticos de Puerto Rico, from Dr. G. A. Moulton, president, A. PH. A., 1945."

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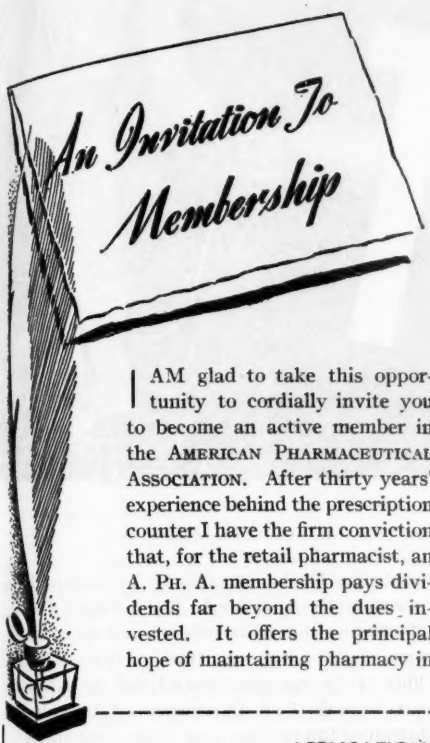
### UNPUBLISHED UNIVERSITY RESEARCH DATA INDEXED

Master theses on scientific subjects are being unearthed from colleges and universities by the National Research Bureau, 415 N. Dearborn St., Chicago 10, and will be indexed in a *Digest Index* to make the material available for industrial and research purposes. Transcripts will be supplied on microfilm by the Library of Industrial Research.




I AM glad to take this opportunity to cordially invite you to become an active member in the AMERICAN PHARMACEUTICAL ASSOCIATION. After thirty years' experience behind the prescription counter I have the firm conviction that, for the retail pharmacist, an A. PH. A. membership pays dividends far beyond the dues invested. It offers the principal hope of maintaining pharmacy in its rightful place among the professions.

Wartime conditions have emphasized an important fact: There is real satisfaction and opportunity in developing the pharmaceutical services of the retail pharmacy. With the rapid development of modern medical care we, in our pharmacies, require professional information and services to keep pace with progress. As we face new problems we realize they can be solved only by organized effort. The A. PH. A. is prepared to provide the necessary leadership, services and information through the most comprehensive program of its ninety-three years of endeavor. Through its House of Delegates the way is opened for a united leadership representative of every subdivision of the profession and drug industry.

I hope you will sign the application blank below and mail it at once. Help make sure the success of the postwar program the A. PH. A. has begun. Please accompany your application with any suggestions which may help us to serve your interests better.

George A. Moulton

President.

**APPLICATION FOR MEMBERSHIP**

## American Pharmaceutical Association

**Approving of its objectives, I hereby apply for active membership in the American Pharmaceutical Association and subscribe to the "Journal of the American Pharmaceutical Association." Enclosed is $____ for membership dues with subscription to the ☐ Practical Pharmacy Edition at $5; ☐ Scientific Edition at $6; ☐ Both Editions at $7.**

**Name in Full**_____

**Number and Street**_____

**Town**_____ **State**_____

**Graduate of**_____ **Year**_____ **Degrees**_____

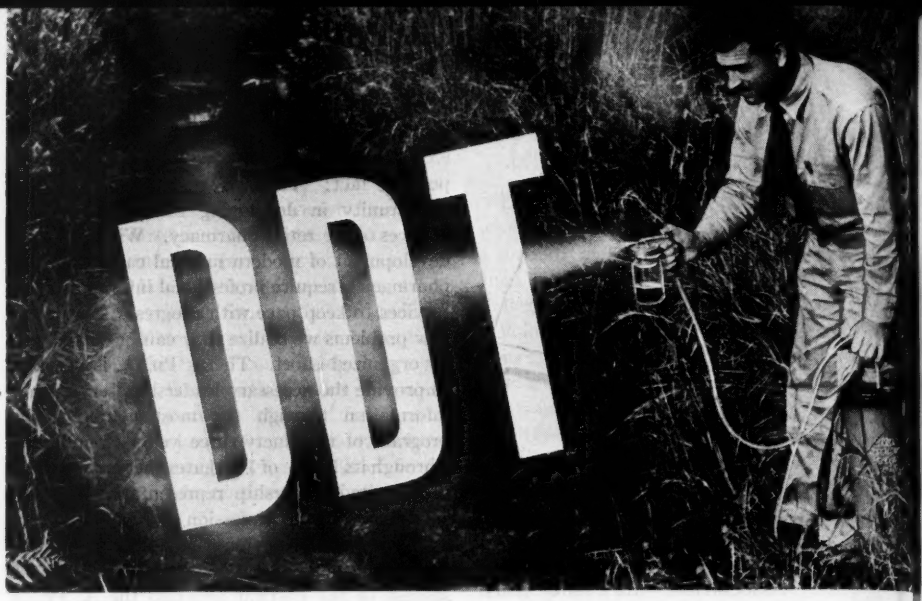
**I am a registered pharmacist in _____ and am engaged or, in the case of retirement, was engaged as: _ Retailer, _ Wholesaler, _ Manufacturer, _ Drug Importer, _ Teacher, School Official or Librarian, _ Research Worker, _ Editor, _ Publisher, _ Representative, _ Pharmaceutical Chemist, _ Food and Drug Official, _ Hospital Pharmacist, _ Association Official, _ Pharmacist in Government Service, _ Student.**

**The applicant named above is recommended by the undersigned two members:**

**Name**_____ **Name**_____

**If the applicant is unacquainted with any member of the Association, the officers will aid in securing the necessary recommendations. This application, with the payment of dues for one year, may be sent to any member of the membership committee, the Secretary, or any officer of the Association.**

**Date**_____ **R. P. FISCHELIS, *Secretary*, 2215 Constitution Avenue, Washington 7, D. C.**




**A GROWING VOLUME OF THIS NEW INSECTICIDE WILL BE DISPENSED IN COMING MONTHS; HERE ARE THE LATEST DATA ON CIVILIAN USES**

PHARMACISTS will be answering many queries on DDT now that this new insecticide is generally available on drugstore shelves. When all WPB restrictions on civilian use were lifted September 1 total production, revealed for the first time, stood at 3,000,000 pounds monthly. Thus the development of DDT manufacture emerges as one of the outstanding production achievements of the war. A majority of the 15 producers,* to whom this honor falls, are not insecticide firms as such and will probably turn the chemical over to others for processing and marketing.

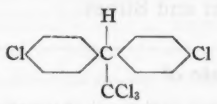
The fanfare introducing DDT rivals that accorded penicillin, and there are many who believe the two will stand together as the top medical developments of the war years. Although the control of insect-borne diseases will constitute a major health victory of this generation, the pharmacist's patrons are particularly interested in the many uses of DDT in controlling insect pests of the home, farm and garden.

Results of controlled experiments now becoming available justify much of the early enthusiasm concerning DDT, although its limitations have been more clearly defined. Most of the following information on civilian uses is based on an evaluation of the Army's wartime experience by the Office of the Surgeon General and the latest reports from the U. S. Department of Agriculture's Bureau of Entomology and Plant Quarantine.

## Preparation and Properties

DDT, an abbreviation for dichlorodiphenyltrichloroethane, has been variously known abroad as Gesarol, Neocid, GNB, GNB-A and SBLY.

It is synthesized from monochlorobenzene, chloral hydrate and sulfuric acid, the final product having the structural formula:




The chemical is a white, crystalline substance,

* J. T. Baker Chemical Company, Phillipsburg, New Jersey; Cincinnati Chemical Works, Norwood, Ohio; E. I. DuPont de Nemours, Wilmington, Delaware; General Chemical Company, 40 Rector Street, New York City; Hercules Powder Company, Wilmington, Delaware; Hooker Electrochemical Company, Niagara Falls, New York; Merck and Company, Rahway, New Jersey; Monsanto Chemical Company, 1700 South Second Street, St. Louis, Missouri; Montrose Chemical Company, 120 Lister Avenue, Newark, New Jersey; Sherwin Williams Company, 101 Prospect Avenue, Cleveland, Ohio; Marietta-Harmon Chemicals, Inc., Marietta, Ohio; Michigan Chemical Company, St. Louis, Michigan; Pennsylvania Salt Manufacturing Company, Widener Building, Philadelphia, Pennsylvania; Westvaco Chlorine Products, 405 Lexington Avenue, New York City; United States Rubber Company, Elm Street, Naugatuck, Connecticut.

sometimes yellowish white in the technical grade, and remarkably stable. High humidity agglomerates the technical grade but does not affect insecticidal efficiency. DDT is practically insoluble in water, moderately soluble in mineral and vegetable oils and readily soluble in many common organic solvents. Examples of DDT solubility are:

| SOLVENT | GM. PER 100 CC. AT 27–30° C. |
|---|---|
| Fuel oil | 8–10 |
| Kerosene, crude | 8 |
| Kerosene, refined odorless | 4 |
| Soybean oil | 14 |
| Cottonseed oil | 9 |
| Xylene | 56 |
| Cyclohexanone | 100 |
| Ethyl alcohol, 95% | 1.5 |

## Toxicity

DDT acts as both contact and stomach poison. Ordinarily it is absorbed through the feet, antenna and mouth parts of the insect. Attacking the nervous system, DDT produces hyperactivity and uncoordinated movements, followed by progressive paralysis and death. It is slow acting and may take from ten minutes to several hours to produce death, depending on the insect species.

Experiments by the U. S. Public Health Service and Food and Drug Administration re-emphasize that DDT possesses inherent toxic properties to man and higher animals and may, if not properly handled, constitute a health hazard. Toxicity in warm-blooded animals is much lower, however, than in fish or certain other cold-blooded animals.

DDT appears to be somewhat less toxic than lead or fluorine. There are no data on the toxic dose for man, but FDA experiments indicate that "the safe level in human food cannot be over 10 parts per million."

Ingestion of DDT and absorption of oil solutions of DDT through the skin appear to be the principal source of danger. No untoward effects due to inhalation or skin absorption have been demonstrated in manufacturing employees or others who have handled DDT powder regu-

**BREAKFAST FOR "COOTIES."—Great numbers of lice needed for controlled tests on DDT must be fed by volunteers. Here an entomologist removes the cloth swatches laden with blood-gorged insects. Researchers in the U. S. Department of Agriculture maintained the first louse colony on their own blood but large-scale experiments eventually required the services of 60 volunteers.**

*U. S. D. A. Photo by Knell*

larly. There is ample evidence that DDT in oil or organic solvents may be absorbed through the skin of man and animals. But occasional brief contact appears not to be dangerous.

At least until further knowledge on toxicity is available, the following precautions in handling DDT should be observed: (1) Large-scale users should wear respirators. (2) Rubber gloves should be worn when mixing or handling solutions in oil or organic solvents. (3) All food and kitchen utensils should be removed or covered when spraying kitchens. Insure that DDT will not be accidentally eaten.

Symptoms of DDT poisoning, in laboratory animals, are loss of appetite, hyperexcitability, tremor and convulsions.

Animal experiments indicate that antidotal treatment should be symptomatic, requiring central nervous system depressants, according to recommendations in the latest Army bulletin on DDT prepared by the Office of the Surgeon General. Tribromoethanol, paraldehyde or barbiturates would be indicated. Urethane proved most satisfactory for DDT convulsions in rats, but this agent is not very effective in humans. When DDT has been ingested orally, the stomach should first be washed with water or saline, then give 30 Gm. of magnesium sulfate (through a stomach tube) and allow to remain. If there is evidence of hepatic insufficiency routine procedures for treating lesions resulting from hepatotoxic agents should be included.

Labels for DDT must not imply that the insecticide is safe or nonpoisonous and must otherwise be labeled in conformity with the laws of your state governing toxic insecticides.

## Range of Effectiveness

Although DDT is remarkably effective against a wide range of insect pests, entomologists emphasize that it is not effective against all insects. It often acts much slower than some other insecticides, such as pyrethrum or rotenone. It does remain effective for a much longer time than other insecticides.

Results of extensive tests on DDT for civilian use remain to be determined. According to the most recent report by the Department of Agriculture, "the proper formulation to use against each pest, the rate and time of applications, and whether or not DDT can be expected to give more satisfactory and more economical results than other available materials, has not yet been worked out for many insects."

Experience to date shows that DDT is a superior insecticide for body lice, bedbugs, flies of several species and mosquitoes. Lice affecting livestock, clothes moths, carpet beetles, silverfish and others are effectively controlled but the proper dilutions of DDT have not been definitely determined.

Conflicting reports have appeared concerning efficacy against certain species of ants, cockroaches, spiders, poultry mites and ticks. Against the screwworm, heel fly or cattle grub and chigger DDT offers little or no protection.

By last spring the Department of Agriculture, with the cooperation of state agricultural experiment stations, had tested DDT against more than 170 different insect species. Of these, some 30 pests were definitely more susceptible to DDT than to other commonly used insecticides and 18 were controlled about equally well.*

## Forms of DDT

DDT has been used in a number of different types and kinds of vehicles, depending on the the specific use intended. For some purposes the most satisfactory formulation has not been definitely determined.

Among the formulas recommended by the Office of the Surgeon General for use in the Army are the following:

POWDER

| | |
|---|---|
| DDT, technical grade..... | 10% |
| Pyrophyllite..... | 90 |

Milling DDT, technical grade, with diluents reportedly presents some difficulties. In addition to pyrophyllite, a variety of talcs, clays and soapstone have been used.

* DDT was especially toxic against the codling moth, cabbage looper, catalpa sphinx, cotton bollworm, cotton fleshopper, eastern tent caterpillar, elm bark beetle, green-striped maple worm, gypsy moth, horn flies on cattle, Japanese beetle, *Lygus* and four other kinds of sucking bugs, mimosa webworm, pine sawflies, pink bollworm, spruce budworm, velvetbeam caterpillar, vetch bruchid, white-fringed beetles, mosquitoes, bedbugs, three kinds of lice on man, houseflies and fleas in buildings.

DDT was about equal to other insecticides in effectiveness against the corn ear worm, diamondback moth, European corn borer, cockroaches, grape berry moth, grasshoppers, imported cabbage worm, oriental fruit moth, potato leafhopper, silverfish, and the following stored-product pests: cadelle, confused flour beetle, granary weevil, Indian-meal moth, lesser grain borer, red flour beetle, rice weevil, and saw-toothed grain beetle.

Proper DDT formulations for some of these insects cannot yet be definitely stated and for others use may be limited by possible danger of residues on edible plants.

Thus far DDT has shown little or no effect against the boll weevil, California red scale (adults), cattle grubs, cotton aphid, cotton leafworm, Florida red scale, Mexican bean beetle, orchard mites (2 kinds), parlatoria scale, plum curculio, red spider, sugarcane aphid and sugarcane borer.

*Signal Corps Photo*

**EFFECTIVENESS OF DDT has been demonstrated through extensive use in both the armed forces and the populace of liberated countries. Civilians on Okinawa (above) are shown being treated with DDT louse powder by the Army. Control of typhus and other insect-borne diseases was one of the great medical achievements during the war.**

MOSQUITO LARVICIDE

| | |
|---|---|
| DDT, technical grade | 7 oz. |
| Fuel oil, No. 2 | 1 gal. |

Grind up all lumps before adding DDT to solvent. Stir at intervals. As much as twenty-four hours may be required to effect solution.

RESIDUAL SPRAY

| | |
|---|---|
| DDT, technical grade | 5% |
| Methylated naphthalene | 15 |
| Kerosene | 80 |

This type of spray leaves a residue that may remain effective for several weeks to several months. Apply as coarse spray (not mist) or with paint brush. One quart should cover about 250 square feet. *Caution:* Fire and explosion hazard due to kerosene. Avoid open fires, electrical equipment, etc.

DELOUSING SPRAY FOR HUMANS

Stock Solution:

| | |
|---|---|
| DDT, technical grade | 6% |
| Benzyl benzoate | 68 |
| Benzocaine | 12 |
| Wetting agent (Tween 80*) | 14 |

Dilute with 5 parts of water by volume and use within twenty-four hours.

DDT EMULSION CONCENTRATE FOR HOUSEHOLD SPRAYS, MOSQUITO LARVICIDE AND SHADE TREE INSECTS

Stock Solution:

| | |
|---|---|
| DDT | 25 Gm. |
| Emulsifier (Triton X-100†) | 10 |
| Xylene | 65 |

Dilute to 5% aqueous emulsion with 4 parts of water by volume. *Caution:* Explosion hazard in tightly closed places.

Other formulations included in the recommendations for civilian use of DDT recently issued by the Department of Agriculture are:

1. *Aqueous suspension* prepared by making a paste of *wettable* DDT powder and water and diluting to the desired concentration. For houseflies a 5% suspension is desirable early in the season but in late summer and fall a 2.5% suspension has given excellent results. This material can also be safely used on livestock.

2. *Kerosene solution* may be prepared from the technical grade of DDT, 7 ounces to 1 gallon of kerosene. While this 5% solution equals the effectiveness of the suspension made from wettable DDT, it has the disadvantages of odor, possible dermatitis due to kerosene and fire hazard.

3. *Emulsion concentrate for forest and shade-tree insects:* Dissolve 1 pound of technical grade DDT in 1 quart of solvent (xylene) and add 1 to 1.5 ounces of emulsifying agent. Dilute with water to the desired concentration, usually 0.1 to 1% (see under uses).

## Uses of DDT

*LICE.*—The Army's delousing spray, containing both benzyl benzoate and DDT, has a quick action that is both lousicidal and ovicidal. As recommended by the Office of the Surgeon

* Product of the Atlas Powder Co., Wilmington 99, Del.
† Product of Rohm and Haas Co., 222 W. Washington Square, Philadelphia, Pa.

General, about two-thirds of an ounce is required per person. A bath should not be taken for at least twenty-four hours after application of the spray to the body. When applying to the scalp, the eyes must be protected. For head lice, not more than 0.5 ounce is usually needed for complete deinfestation.

Two Army uses for the 10% DDT powder may also be adopted by civilian physicians. For head lice the powder is dusted lightly into the hair and rubbed in with the fingertips. For crab lice apply the powder thoroughly to all regions of the body having a moderate growth of hair. Do not bathe for at least twenty-four hours. Repeat the application after one and two weeks. The DDT powder does not have ovicidal properties.

*FLEAS.*—For fleas on pets, except cats, rub the 10% DDT powder into the fur to minimize the danger of ingestion. Usually a thorough application on the back of the neck will be sufficient. If fleas have infested the home, apply the DDT powder to the sleeping places of dogs and cats and in holes and runways used by rats. It may be used beneath rugs, on floors and even on soil visited by flea-infested animals. According to the Department of Agriculture, 0.5 pound should treat 1000 square feet. DDT kerosene spray, 5%, may also be used in such places—1 quart to 250 square feet, applied as a coarse spray.

*ANTS.*—For ants in buildings apply a 5% DDT kerosene spray behind and beneath baseboards, behind window sills and frames about sinks in the kitchen and bathroom, to all table legs and chair legs, to both sides of pantry shelves and to any cracks leading outdoors.

Not all species of ants will respond to the treatment, the Department of Agriculture reports, but many of them can be controlled for several weeks with a single application.

For ants in lawns, the 10% DDT powder should be used since the kerosene base of the spray will kill grass.

*BEDBUGS.*—Government entomologists characterize DDT as "the perfect answer to the bedbug problem." When properly applied as a 5% spray or 10% powder to mattresses and beds or to chicken houses, these places will remain free of bedbugs for six months or more. About 3 fluid ounces of a 5% DDT kerosene solution will treat a full-size bed, including mattress, pillows, springs and joints in the bed frame. The spray should be forced into each joint of the bed and both sides of the mattress should be treated lightly. After a few hours of drying, the bed may be made and used without fear of injury to the occupant.

*U. S. D. A. Photo by Knell*

**PARTICLE SIZE OF DDT for insecticidal dusts is an important factor. Using a self calculating air permeation apparatus (above), a U. S. Department of Agriculture chemist determines the size of particles in DDT before use in current investigations.**

When the 10% DDT powder is used for this purpose, about 1.5 ounces per bed should be applied in the same locations recommended for the spray.

There should be some ventilation when applying DDT spray indoors and a face mask will further protect against any possible irritation due to kerosene or excessive inhalation of DDT.

*FLIES.*—Tests by the Bureau of Entomology and Plant Quarantine indicate that the residue left by DDT spray is probably more effective against house or stable flies than any other treatment. It remains effective for several weeks to several months.

Either the 5% aqueous suspension of wettable DDT or the kerosene solution of the technical grade may be used. The suspension will leave a light visible residue on surfaces which may be objectionable in the home. On the other hand, kerosene solution involves a fire hazard.

Apply about 1 quart to 250 square feet of surface, using a sprayer adjusted to deliver large

droplets—not a mist. Cover all areas on which flies are apt to rest. It should be remembered that DDT is a slow-acting insecticide. Flies may not die for one to three hours after contact.

As an adjunct to residual spraying, cloth strips may be dipped into the DDT spray and hung from the ceiling.

*Oil sprays should not be used on animals* because of the danger of dermatitis and systemic toxicity.

*COCKROACHES.*—The 10% powder is about as good as sodium fluoride for treating hiding places. In using either insecticide about a week elapses before the number of roaches is markedly reduced, but DDT lasts longer than the fluoride.

The 5% spray may be used as a supplemental treatment to reach the underside of table tops and shelving, or for the entire application. All kitchen utensils and food should be carefully protected or removed.

*BROWN DOG TICKS.*—About one-quarter teaspoonful of the 10% powder will be sufficient to dust over the entire body of an average-sized dog.

If the ticks have infested the home, apply the powder to cracks about the baseboards and to infested floor coverings. Since the ticks are killed slowly, the dust should not be cleaned from fabrics and floors for about two weeks.

*MOSQUITOES.*—For home use, a 5% DDT solution may be applied in the same manner as against flies. To control mosquitoes and other insects at outdoor meetings the Army technique of establishing barrier zones may be used. At least two hours before the meeting spray a strip not less than ten yards in depth surrounding the area to be protected. Apply a 5% solution in oil or kerosene with a paint sprayer. Adjust the nozzle for a fine mist, hold horizontally and spray crosswind. One quart of 5% solution per acre will provide a temporary control of mosquitoes, while 5 quarts per acre will be effective for more than a week.

For treating mosquito breeding places the oil solutions (1 to 5%) used by the Army will be effective. The type of vehicle and sprayer to use for best results will depend somewhat on the terrain. In general the equivalent of 0.2 pound of pure DDT per acre, repeated every six to nine days, is recommended. Greater dosages may kill fish and be harmful to wildlife. A special micronized DDT powder, 10%, has also been used successfully for larviciding.

*INSECT PESTS ON TREES.*—Entomologists do not yet approve the use of DDT over extensive areas, such as forests, by laymen. Beneficial insects, fish and wildlife are all endangered by indiscriminate application. Irreparable damage might result from upsetting the balance of nature, a possibility now being investigated by several research groups.

For limited use to protect shade trees and ornamentals against *defoliating insects* one of the emulsion sprays, previously described, may be used in a concentration of 0.5 to 1%. Surfaces should be wetted until the spray begins to drip from the foliage. DDT itself is harmless to trees but some emulsifiers and vehicles may burn the foliage.

DDT sprays have proved very effective against *sucking insects*, such as leaf hoppers, tree hoppers and spittle bugs, in strengths of 0.1 to 0.5%.

Against many important *fruit insect* pests DDT has shown promise. Water-dispersible DDT in a 0.5%, or preferably 1%, spray has proved most satisfactory. It may be used in combination with most of the common insecticides now in use. Since there will be no demand for fruit tree sprays until next season, the Department of Agriculture has withheld detailed recommendations until additional tests are evaluated.

*VEGETABLE INSECTS.*—DDT as a dust, spray or aerosol will kill a number of common insects which attack vegetables but has little effect on others. Control of several common potato pests will be an important use.

Most vegetable plants, excepting cucurbits, are not adversely affected by DDT as low-strength dusts or aerosol.

Care will be needed to avoid poisonous residues.

*STORED SEEDS.*—"Extremely effective" control of pests attacking stored seeds results from application of 3% DDT dust, one ounce per 100 pounds of seed. Magnesium oxide, an insect repellent, has been recommended as the diluent. *DDT does not repel insects.*

DDT must not be used on stored grains or cereal products to be used for food.

*GRAIN BINS, WAREHOUSES AND MILLS.*—Sprays containing 5% or less of DDT have been found very effective in buildings subject to infestation. Walls and woodwork should be sprayed with not more than 1 gallon per 1000 square feet.

*Further information concerning specific uses of DDT may be obtained by writing to the Bureau of Entomology and Plant Quarantine, U. S. Department of Agriculture, Washington 25, D. C.*

# SUGGESTIONS FOR PARTICIPATING IN PHARMACY WEEK

PHARMACY Week offers the practicing pharmacist a nation-wide public relations effort in his behalf. This year November 4 to 10 has been set aside for the coordinated effort to impress upon the public the professional and public health services provided by pharmacy. To benefit fully from this national program, the individual pharmacist should utilize the facilities of the Pharmacy Week Committee to participate on the community level.

In announcing the 1945 Pharmacy Week plans outlined below, Charles R. Bohrer, Committee chairman, said:

"Some 20,000,000 persons visit the drugstores of the nation every day, to say nothing of those who pass by drugstore windows and the millions who listen to the radio. Here is the opportunity to reach a large percentage of the people if there is concerted action. Every local and state association and individual pharmacist should recognize and take advantage of this opportunity to the fullest extent. Each pharmacist should realize that the effort he puts into Pharmacy Week will largely reflect to his own credit."

Local and state committees for Pharmacy Week should be appointed and a promotion program initiated immediately. Through cooperating state pharmaceutical associations the national Committee will supply pharmacists with posters without charge. The colorful official poster, 22 by 28 inches in size, will make a striking centerpiece for any professional display.

Practical suggestions for effective displays, as well as aids for an over-all observance of Pharmacy Week, are available in a special bulletin entitled "Pharmacy Week Suggestions to Retail Pharmacists." A copy will be sent to you without charge on request to the Pharmacy Week Committee, 2215 Constitution Avenue, Washington 7, D. C.

## Window Display Contest

The Committee invites every pharmacist to enter the Pharmacy Week window display contest. For the display contest, awards have been provided in three categories: retail pharmacy, pharmacy colleges and state pharmaceutical associations.

To the winning retail pharmacist will go the Robert J. Ruth trophy, top award named for the founder of Pharmacy Week and contributed by the Federal Wholesale Druggists' Association. The ten next best displays will receive certificates of merit from the AMERICAN PHARMACEUTICAL ASSOCIATION and the National Association of Retail Druggists. Many other prizes will be awarded by sectional, state and local groups for displays in their respective areas.

The state pharmaceutical association entering the best display will receive a trophy or other suitable prize from the AMERICAN PHARMACEUTICAL ASSOCIATION. Colleges and schools of pharmacy will again compete for the AMERICAN PHARMACEUTICAL ASSOCIATION award for the best display from this group.

The awards will be made under the following rules:

### GENERAL RULES FOR DISPLAY CONTEST

1. Pharmacy Week windows should convey a message which will inform the public of the professional character and service of pharmacy.
2. Pharmacy Week windows will be judged upon:
   (*a*) The value and effectiveness of the message to the public.
   (*b*) The professional character of the window.
   (*c*) Originality.
   (*d*) The arrangement and details of the window.
3. Pharmacy Week windows *containing any commercial advertising will not be accepted* in the contest.
4. Pharmacy Week windows which have been entered in former years are ineligible.
5. Photographs must be of window displays which were actually installed on or before the beginning of Pharmacy Week and which remained in the window for at least the entire period of Pharmacy Week, November 4–10, 1945.
6. Photographs of windows submitted should be 8 by 10 inches in size, or some other suitable size, so that the judges will be able to study details of the display. Glossy prints are preferable.

### RULES FOR RETAIL PHARMACISTS' CONTEST

1. General rules 1 to 6 inclusive apply to the retail pharmacy contest.

2. Photographs of window displays must be submitted to the secretary of the respective state pharmaceutical associations on or before December 15, 1945, in order that the state winner may be judged and entered in the national contest.
3. Each state association shall appoint a judging committee at some date prior to December 15, 1945, and this committee will meet and select the best display within the state. A photograph of that window shall be mailed to the national Pharmacy Week Committee not later than January 15, 1946. Entries mailed after that date will not be accepted in the national contest.
4. Only the state winner from each state may be entered in the national contest.
5. As soon as possible after January 15, 1946, a national committee of judges will select the best eleven displays from the states. The best display in this group will be awarded the Robert J. Ruth trophy and the others will be awarded certificates of merit.

#### RULES FOR COLLEGE CONTEST

1. General Rules 1 to 6 inclusive apply to the college contest.
2. Only one photograph from each college may be entered.
3. Photographs of displays shall be mailed to the national Pharmacy Week Committee on or before January 15, 1946. Entries mailed after that date will not be accepted in the contest.
4. Entries will be judged by judging committee as soon as possible after that date.
5. The three most meritorious displays will be selected, the best of these receiving the A. PH. A. Prize, which will be a cup or other suitable award.

#### RULES FOR STATE ASSOCIATION CONTEST

1. General rules 1 to 6 inclusive apply to the state association contest.
2. Only one photograph from each state association may be entered.
3. Photographs of displays shall be mailed to the national Pharmacy Week Committee on or before January 15, 1946. Entries mailed after that date will not be accepted in the contest.
4. Entries will be judged by judging committee as soon as possible after that date.
5. The three most meritorious displays will be selected, the best one of these receiving the A. PH. A. Prize, which will be a cup or other suitable award.

PARTICIPATE • NOVEMBER 4-10

## Publicity

State and local associations, colleges and individual pharmacists are urged by the Committee to make plans at once for Pharmacy Week publicity. Newspaper interviews can often be arranged by offering timely information on new drugs, unusual local incidents illustrating the health services of the pharmacist, or wartime services of the community's pharmacists on the home front or in the armed forces.

Contacts whould be made with local editors to point out the suitability of Pharmacy Week as a subject for editorial comment. Data on current achievements of pharmacy may be obtained from pharmaceutical publications to help supply editors with background material.

Most pharmacists will want to devote advertising space during Pharmacy Week to institutional copy, emphasizing new advances in the profession and the ever-present health facilities of the pharmacy. In smaller communities pharmacists often pool their efforts in one joint public announcement, utilizing a full-page advertising space.

Additional suggestions for public relations ma-

terial and sample editorials are supplied in the Committee's bulletin mentioned above.

Although present demands for broadcast time may prevent the Committee from placing programs on national networks this year, arrangements for Pharmacy Week broadcasts may be made with many local stations.

Build radio addresses or interviews around some feature or service of pharmacy that touches the lives of your listeners. A timely script has been prepared by the A. PH. A. Committee on Radio Publicity and is available without charge. During this fifteen-minute broadcast a war veteran learns about pharmacy as a career from a local pharmacist who is a veteran of the first world war. Pharmaceutical organizations which have not received this material should address a request to AMERICAN PHARMACEUTICAL ASSOCIATION, 2215 Constitution Ave., Washington 7.

A wide range of additional material that can be easily adapted for broadcasts or for addresses before civic and educational groups has been prepared by the Pharmacy Week Committee in a series of 19 articles listed below.

## USE THIS COUPON TO OBTAIN—

✓ Material for Broadcasts and Addresses

✓ Reproductions of Former Winning Displays

✓ Suggestions for Pharmacy Week Observance

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NATIONAL PHARMACY WEEK COMMITTEE
2215 CONSTITUTION AVENUE, N. W., WASHINGTON 7, D. C.

Copies of the articles listed below are available as follows: 3 copies free of charge; any 10 copies, 50¢; entire series, $1.00. Check this list, fill in the name and address and mail it to the Committee, with remittance if required.

- ☐ No. 1. The Romance of Foxglove
- ☐ 1. The Value of Research
- ☐ 3. Famous Discoveries by Famous Pharmacists
- ☐ 4. Drugs of the Scriptures
- ☐ 5. Drugs of the North American Indians
- ☐ 6. The Origin and Significance of Pharmacists' Show Globes
- ☐ 7. The Apothecary in Literature
- ☐ 8. Hospital Pharmacy
- ☐ 9. History of Pharmacy
- ☐ 10. The Apothecary
- ☐ No. 11. The Pharmacist—A Guardian of Your Health
- ☐ 12. The American Way in Pharmacy
- ☐ 13. Responsibilities and Educational Background of the Pharmacist
- ☐ 14. Pharmacy—A Profession of Service
- ☐ 15. Pharmacy and the War
- ☐ 16. Health Services by Pharmacists
- ☐ 17. How Dependable Are Your Drugs?
- ☐ 18. Highlights in the World of Pharmacy
- ☐ 19. Your Pharmacy

☐ Check here if you want reproductions of the winning 1942, 1943 and 1944 Pharmacy Week window displays—No charge.

☐ Check here for copy of "Suggestions to Retail Pharmacists for Pharmacy Week Observance." No charge.

Name.....

Street & Number.....

City & State.....

Amount Enclosed.....Date.....

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# PHARMACY WEEK. . .
# INSTALLING YOUR WINDOW DISPLAY

SHOW windows express to the public, perhaps often inaccurately, the character of a pharmacy and its services. To emphasize the pharmacist's professional services, special window displays have proved to be one of the most effective features of Pharmacy Week each year.

Properly selected materials arranged according to tested display principles will make your Pharmacy Week display effective without a large investment of time or money. Outline your display on paper well in advance so that any special material or signs will be on hand before November 4.

Preliminary plans usually start with a decision on the basic theme. Then jot down a list of materials needed to put across your idea and write the captions for any show cards needed. A pencil sketch should be made to show the arrangement of various units in the window. Don't neglect to estimate the expenses involved in getting your display off the paper and into the window. This paper work has proved to be one of the best ways to save time and unnecessary or unexpected expense.

## Central Theme

Window displays with a single theme—one dominant idea—are conceded to be most effective. No one can relate two stories at the same time. Neither can confusion be avoided in the show window when we try to "tell" more than a single story in the few seconds granted by the sidewalk audience.

When the central idea has been chosen, select the minimum amount of materials needed to dramatize and illustrate that message. All parts of the display should be in keeping with this objective.

## Show Cards

Through cooperating state pharmaceutical associations, the Pharmacy Week Committee is distributing without charge a colorful poster for use November 4 through 10. It will make a suitable centerpiece for a wide variety of professional displays. If these are available in your state, only supplemental side cards will probably be needed.

The most effective displays usually have a minimum of reading material. Be brief, nontechnical and to the point. Since the passer-by may not take time to read all show cards in a display each card should be able to stand alone as a unit whenever possible. If a card sequence is necessary, the progression is from left to right.

Ordinarily the best type of lettering will be the style most easily read. Unless you have some knowledge of typography or expert advice, one style of lettering had best be used throughout the display. Crudely lettered or handwritten show cards are not economical. A poorly lettered sign can ruin an otherwise productive and effective display.

Lettering skill, well-designed stencils or cut-out letters should be the only substitutes for a professional sign painter. Sources of lettering materials are given on page 270.

## Background and Trim

A plain background with minimum decoration is advisable. Unrestrained color or elaborate trim attracts attention—but to the setting rather than to the central theme of the window. Backgrounds of fabricated or composition board can be easily made and inexpensively coated with "water" paint. Restrained use of crepe paper, flat or pleated, is often effective, although bright festoons and streamers will more likely only divert attention.

If the official Pharmacy Week poster is used, the predominant hue of orange-red will determine the color scheme. For background purposes, pleasing color contrasts to the poster are green with a bluish cast, dark green and greenish blue.

The effective use of color is often an important factor in window display. The color wheel reproduced on page 270 will be helpful in solving the recurring problem of color combinations.

Two colors directly opposite each other on the wheel are contrasting, or complimentary, colors. When a color harmony has thus been chosen, the effect may often be improved by using one color pure and the other mute (i.e., color that has been grayed or darkened by the addition of black).

To obtain three harmonizing colors, split one of the selected contrast colors by using two colors

very close together on the wheel. Three-color combinations may also be obtained by selecting three colors all equidistant from each other.

The color wheel can, of course, only suggest the basic colors which belong together. Color brightness or intensity will often be equally important. This can best be judged by securing a book of actual color samples and pasting color slips in position on the wheel so that specific colors may be compared. Both the intensity and distribution of colors should be considered when planning the color "blocks" in the sketch of your display.

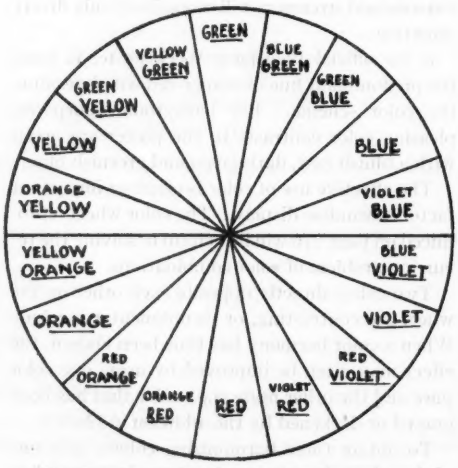
### Arrangement

Simplicity should be the keynote of professional window displays for the retail pharmacy. Two principal criticisms heard in past meetings of the judging committee for Pharmacy Week displays are: (1) Overcrowding—usually by too much pharmaceutical apparatus or attractive odds and ends not needed to put across the central theme. (2) Unrelated display material that attempts to tell two stories at the same time.

Some of the most striking and forceful windows are extremely simple. Don't try to fill the space. Have the courage to omit everything that is not essential.

To lead the eye automatically and swiftly to the central point of interest and dominant idea, the grouping of signs and objects should follow simple rules of balance and symmetry. If the official poster is used as the centerpiece it should dominate the display both by color and position. The use of mortars and pestles in carrying out your theme will link the display to the poster. The display theme may also be tied in with the basic poster appeals of "family" and "protection to life."

Remember to have your Pharmacy Week window photographed for entry in the contests.




WHEEL FOR ESTIMATING COLOR CONTRASTS

## SOURCES OF DISPLAY MATERIALS

*(Ask for Catalogs)*

### BACKGROUND PAPERS, CARDBOARDS AND DISPLAY MATERIALS

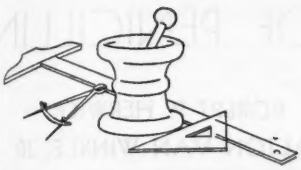
Miller Paper Co., 80–82 Wooster St., New York, N. Y.
Textkraft Sales Co., 10 East 33rd St., New York, N. Y.
F. D. Maxwell Corp., 7 West 36th St., New York, N. Y.
Carlo's, 220 Fifth Avenue, New York, N. Y.

### CONSTRUCTION PAPERS, ART SUPPLIES, ETC.

Milton Bradley, 200 Fifth Avenue, New York, N. Y.
Arthur Brown and Bros., 67 West 44th St., New York, N. Y.
E. H. and A. C. Friedrich, 40 East 43rd St., New York, N. Y.
American Crayon Co., 9 Rockefeller Plaza, New York, N. Y.

### LETTERS AND LETTERING GUIDES

Wrico Lettering Stencils and Pens—E. Dietzgen & Co., 103 Park Ave., New York, N. Y.
Cut-out Pasteboard Letters—Eagle Supply Co., 327 West 42nd St., New York, N. Y.
Carlo's, 220 Fifth Ave., New York, N. Y.
New England Decorating Co., Boston, Mass.
Cut-out Wood Letters—New York Wood Letter Co., 18 Green St., New York, N. Y.
Manhattan Wood Letter Co., 151 West 18th St., New York, N. Y.
Plastic Letters—W. S. Stensgaard & Assoc., 30 Rockfeller Plaza, New York, N. Y.
Gummed-paper Letters—Tablet and Ticket Co., 115 E. 23rd St., New York, N. Y.
Felt and Metal Letters—Adler-Jones Co., 521 S. Wabash Ave., Chicago, Ill.
Others—Mitten Display Letter Co., Redlands, Calif.



# A SUGGESTED DISPLAY FOR PHARMACY WEEK

**designed by JOHN A. LYNCH of the Helm Pharmacy, Philadelphia**
INSTRUCTOR IN COMMERCIAL PHARMACY AND DISPLAY, TEMPLE UNIVERSITY SCHOOL OF PHARMACY

SIMPLICITY and professional dignity characterize the suggested 1945 Pharmacy Week display shown above. A rough sketch of the design which later became the official Pharmacy Week poster has been used as the focal point of interest.

The poster may be mounted on cardboard, such as an old display, by using scotch tape or adhesive plaster at the four corners. To utilize this display plan, a smaller sign depicting some phase of the profession will be needed for each end of the window.

If show globes are not available they may be replaced by other display material, employing the side cards for brief explanatory captions when necessary.

Mortar and pestle, graduates and prescription bottles are grouped at the base of the centerpiece to symbolize prescription service. This might be modified to show prescription ingredients together with the finished product, or to depict the steps in compounding a prescription.

The background used in this instance is blue crepe paper, pleated as illustrated in the photograph.

John A. Lynch, Philadelphia pharmacist who designed the display, emphasizes the importance of keeping professional displays simple and uncluttered.

**1945 COMMITTEE ON PHARMACY WEEK**

C. R. Bohrer, chairman, West Plains, Mo.; R. D. Bienfang, Norman, Okla.; H. V. Darnell, Indianapolis, Ind.; L. J. Dueker, St. Louis, Mo.; L. L. Eisentraut, Des Moines, Ia.; L. J. Fischl, Oakland, Calif.; A. C. Fritz, Indianapolis, Ind.; E. W. Gibbs, Birmingham, Ala.; A. R. Granito, Hackensack, N. J.; J. W. Holt, Meridian, Miss.; E. C. Horn, Milwaukee, Wis.; John O'Brien, Omaha, Nebr.; R. Q. Richards, Fort Meyer, Fla.; Walter Rhodes, Portland, Ore.; J. J. Staven, San Francisco, Calif.; W. E. Waples, Baltimore, Md.

# NEW DOSAGE FORMS OF PENICILLIN

**CHESTER S. KEEFER**

CHAIRMAN, COMMITTEE ON CHEMOTHERAPEUTIC & OTHER AGENTS, NAT'L RESEARCH COUNCIL; MEDICAL ADMINISTRATIVE OFFICER TO COMMITTEE ON MEDICAL RESEARCH, OFFICE OF SCIENTIFIC RESEARCH AND DEVELOPMENT

**ROBERT P. HERWICK**
**WALTON VAN WINKLE, JR.**
**LAWRENCE E. PUTNAM**

U. S. FOOD AND DRUG ADMINISTRATION

ON July 6, 1945, the Federal Food, Drug and Cosmetic Act was amended to provide for the certification of batches of drugs composed wholly or partly of any kind of penicillin. The Federal Security Administrator, in accordance with the provisions of this amendment, has promulgated regulations providing such standards of identity, strength, quality and purity as will insure the safety and efficacy for use of a number of penicillin products. Before distribution in interstate commerce each manufacturer must submit samples of each batch of any penicillin product to the Food and Drug Administration for examination and must obtain a certificate showing that the batch complies with the applicable regulations.

Inclusion of the penicillin products listed in the regulations providing for certification was based on a review of the available scientific evidence and on information developed in consultations with experts in the field of chemotherapy and the medical and scientific staffs of interested manufacturers. The suggestions regarding indications, dosages and precautions reflect as closely as possible the experience of experts in penicillin therapy. These suggestions are necessarily conservative, since experience with many of these products has been limited and there are many questions yet unanswered. As additional evidence accumulates it may be possible to extend the indications and alter the dosage schedules set forth in the following paragraphs.

## Parenteral Products

### SODIUM PENICILLIN AND CALCIUM PENICILLIN

Sodium penicillin and calcium penicillin are so purified and dried that the final products have a potency of not less than 500 units per milligram. They are sterile, nontoxic and nonpyrogenic and have a moisture content of not more than 2.5 per cent. They are packaged in 100,000-unit, 200,000-unit, 500,000-unit, 1,000,000-unit and 5,000,000-unit sizes.

*Indications and Dosage.*—

GROUP I INDICATIONS

1. All staphylococcic infections with and without bacteremia:
   - Acute and chronic osteomyelitis.
   - Carbuncles—soft tissue abscesses.
   - Meningitis.
   - Cavernous or lateral sinus thrombosis.
   - Pneumonia—empyema.
   - Carbuncle of kidney.
   - Wound infections—burns.
   - Endocarditis.
2. All cases of clostridia infections:
   - Gas gangrene.
   - Malignant edema.
3. All hemolytic streptococcic infections with bacteremia and all serious local infections:
   - Cellulitis.
   - Mastoiditis with intracranial complications i. e., meningitis, sinus thrombosis and so on.
   - Pneumonia and empyema.
   - Puerperal sepsis.
   - Peritonitis.
   - Endocarditis.
4. All anaerobic streptococcic infections:
   - Puerperal sepsis.
   - Localized infections elsewhere.
5. All pneumococcic infections of:
   - Meninges.
   - Pleura.
   - Endocardium.
   - All cases of sulfonamide-resistant pneumococcic pneumonia.
6. All gonococcic infections.
7. All cases of anthrax.
8. All cases of chronic pulmonary suppuration in which surgical treatment is contemplated.
9. All meningococcic infections failing to respond to sulfonamides.
10. All cases of bacterial endocarditis due to susceptible organisms.
11. Erysipeloid (swine erysipelas).
12. Vincent's infection.
13. Prophylactic use in prevention of possible secondary infection following tonsillectomy and tooth extraction in cases with a history of rheumatic fever or in rheumatic heart disease, in congenital heart disease and in other conditions in which secondary infection may occur (infected teeth; tonsils).

From the *Journal of the American Medical Association*, 128: 1161, 1945.

### GROUP II INDICATIONS

Penicillin has also been found to be an effective agent in the following diseases, but its position has not been definitely defined and will require additional experimental work:

1. Syphilis.
2. Actinomycosis.
3. Diphtheria, in conjunction with antitoxin.

### GROUP III CONDITIONS OF QUESTIONABLE VALUE

Penicillin is of questionable value in mixed infections in which the predominating organism is of the gram negative flora—i. e.:

1. Ruptured appendix with peritonitis.
2. Liver abscesses.
3. Urinary tract infections due to Escherichia coli.
4. It is also of questionable value in rat bite fever due to Streptobacillus moniliformis.

### GROUP IV CONDITIONS IN WHICH PENICILLIN IS INEFFECTIVE

1. All gram negative bacillary infections:
   - Typhoid—paratyphoid.
   - Dysentery.
   - Escherichia coli.
   - Hemophilus influenzae.
   - Bacillus proteus.
   - Bacillus pyocyaneus.
   - Brucella melitensis (undulant fever).
   - Pasteurella tularensis (tularemia).
   - Friedländer's bacillus.
2. Tuberculosis.
3. Toxoplasmosis.
4. Histoplasmosis.
5. Acute rheumatic fever.
6. Lupus erythematosis, diffuse.
7. Infectious mononucleosis.
8. Pemphigus.
9. Hodgkin's disease.
10. Acute and chronic leukemia.
11. Ulcerative colitis.
12. Coccidioidomycosis.
13. Malaria.
14. Poliomyelitis.
15. Blastomycosis.
16. Nonspecific iritis and uveitis.
17. Moniliasis.
18. Virus infections.
19. Cancer.

*Method of Preparing Penicillin for Treatment.*—As penicillin is extremely soluble, it may be dissolved in small amounts of sterile distilled, pyrogen-free water, in sterile isotonic solution of sodium chloride or in sterile 5 per cent dextrose solution. When large unit sizes are being used in hospitals, the contents of the ampul should be dissolved in water or saline solution so that the final concentration is 5000 to 50,000 units per cubic centimeter, depending on the circumstances of the case. This solution should be stored under aseptic precautions in the ice box and made up freshly every day. Solutions for local or parenteral use may be diluted further, depending on the concentration desired.

**A SPECIAL STATEMENT CONCERNING CERTIFIABLE PENICILLIN PRODUCTS AND NEW MEDICAL RECOMMENDATIONS ON USES, DOSAGE AND PRECAUTIONS**

*A.* For intravenous injection:

1. The dry powder may be dissolved in sterile isotonic solution of sodium chloride in concentrations of 10,000 to 50,000 units per cubic centimeter for direct injection through a syringe.

2. The dry powder may be dissolved in sterile saline solution or 5 per cent glucose solution in lower dilution (25 to 50 units per cubic centimeter) for constant intravenous therapy.

*B.* For intramuscular injection:

1. The total volume of individual injections should be small, i. e., 10,000 to 50,000 units per cubic centimeter of isotonic solution of sodium chloride. It may also be given by constant intramuscular drip, 120,000 units in 250 cc.

*Methods of Administration of Penicillin.*—There are three common methods of administering penicillin—intravenous, intramuscular and topical. Subcutaneous injections are likely to be painful and should be avoided. The route of choice is intramuscular.

*Dosage.*—The dosage of penicillin will vary from one patient to another depending on the type and severity of infection. The objective in every case is to bring the infection under control as quickly as possible. In most cases a minimum of 100,000 units daily will be required.

It is well to remember that penicillin is excreted rapidly in the urine so that following a single injection it is often impossible to detect it in the blood for a period longer than two to four hours. It is well, therefore, to use repeated intramuscular or intravenous injections every three or four hours or to administer it as a continuous infusion.

*A.* In serious infections with or without bacteremia an initial dose of 15,000 or 20,000 Oxford units with continuing dosage as:

1. Constant intravenous injection of isotonic solution of sodium chloride containing penicillin so that 5000 to 10,000 Oxford units is delivered every hour, making a total of 120,000 to 240,000 units in a twenty-four-hour period. One-half the total daily dose may be dissolved in a liter of isotonic solution of sodium chloride and allowed to drip at the rate of 30 to 40 drops per minute.

2. If a continuous intravenous drip is undesirable, 20,000 to

40,000 units may be injected intramuscularly every three or four hours.

3. After the temperature has returned to normal, the penicillin may be continued as long as there are any signs of active infection.

*B.* In chronically infected compound injuries, osteomyelitis and the like, the dosage schedule should be 20,000 units every two hours or 40,000 units every four hours parenterally with local treatment as indicated. This dosage schedule may have to be increased, depending on the seriousness of the infection and the response to treatment. The best results are obtained in these cases when penicillin is combined with adequate surgical treatment.

*C.* Gonorrhea:

1. Twenty-five thousand units every three hours intramuscularly for five doses. The results of treatment should be controlled by culture of exudate. All patients failing to respond to the first course should be retreated.

*D.* Empyema:

1. Penicillin in isotonic solution of sodium chloride should be injected directly into the empyema cavity after aspiration of pus or fluid. This should be done once or twice daily, using 50,000 or 100,000 units, depending on the size of the cavity, type of infection and number of organisms. Penicillin solution should not be used for irrigation.

*E.* Meningitis:

1. Penicillin does not penetrate the subarachnoid space in appreciable amounts, so that it is necessary to inject penicillin into the subarachnoid space or intracisternally in order to produce the desired effect. Ten thousand units diluted in isotonic solution of sodium chloride in a concentration of 1000 units per cubic centimeter should be injected once or twice daily, depending on the clinical course and the presence of organisms.

*F.* Bacterial Endocarditis:

1. Penicillin is the best agent available for the treatment of bacterial endocarditis. Penicillin alone is as effective as penicillin combined with heparin. The treatment should be continued for three weeks or longer, depending on the individual case. The intramuscular route is the one of choice, although in a few instances it may be desirable to use the continuous intravenous route in order to obtain the maximum effect. The dosage should range from 200,000 to 300,000 units a day if the best results are to be obtained.

#### PENICILLIN WITH DILUENT

Penicillin with diluent is a combination package of penicillin and a suitable solvent such as water for injection, 5 per cent dextrose injection or isotonic solution of sodium chloride.

*Indications and Dosage.*—Same as for sodium penicillin and calcium penicillin.

#### PENICILLIN IN OIL AND WAX

Penicillin in oil and wax is a suspension of calcium penicillin in a menstruum of refined peanut oil in which white wax is dispersed. It is packaged in 100,000 units per cubic centimeter, 200,000 units per cubic centimeter and 300,000 units per cubic centimeter concentration. The white wax content of the 100,000 units per cubic centimeter and 200,000 units per cubic centimeter concentrations is not less than 3 per cent and of the 300,000 units per cubic centimeter concentration not less than 4.7 nor more than 4.9 per cent. The calcium penicillin used in the 300,000 unit per cubic centimeter concentration has a potency of not less than 900 units per milligram, and that in the other concentrations has a potency of not less than 750 units per milligram.

*Indications and Dosage.*—Gonorrhea, acute staphylococcic and streptococcic infections and pneumonia.

All conditions require a minimum of 300,000 units per day. Preparations containing 200,000 units per cubic centimeter may be administered at twelve-hour intervals. If the quantity is 100,000 units per cubic centimeter, administration at eight-hour intervals is necessary. Rotation of the site of injection is desirable; the upper outer quadrants of the buttocks, the anterior thighs and triceps are suggested sites.

*Gonorrhea.*—Three hundred thousand units as a single injection or 200,000 units as an initial injection followed by 100,000 units in twelve hours, or three injections at eight-hour intervals of 100,000 units each. In the presence of complications such as arthritis, endocarditis and epididymitis the dosage should be intensified and prolonged.

*Pneumonia and Acute Staphylococcic and Streptococcic Infections.*—A minimum of 300,000 units daily, preferably in divided doses and continued until the temperature returns to normal and other evidence of infection disappears.

*Precautions.*—DO NOT USE INTRAVENOUSLY. Do not use in those conditions listed in groups III and IV under "Sodium Penicillin" and "Calcium Penicillin."

## Oral Products

#### TABLETS AND CAPSULES BUFFERED PENICILLIN

Tablets buffered penicillin and capsules buffered penicillin contain one or more of the buffer substances sodium citrate, citric acid, aluminum hydroxide, calcium carbonate, magnesium oxide and aluminum-dihydroxyamino acetate. The potency of each tablet or capsule is not less than 20,000 units, and the number of tablets or capsules in each single

package is such that the total number of units therein is not less than 300,000.

#### CAPSULES PENICILLIN IN OIL

Capsules penicillin in oil is a suspension of sodium penicillin or calcium penicillin in refined vegetable food oil. The potency of each capsule is not less than 20,000 units, and the number of capsules in each single package is such that the total number of units therein is not less than 300,000.

#### PENICILLIN WITH ALUMINUM HYDROXIDE GEL

Penicillin with aluminum hydroxide gel is a combination package of sodium penicillin or calcium penicillin and aluminum hydroxide gel. The quantity of aluminum hydroxide gel packaged with the penicillin shall be 30 cc. for each 100,000 units.

*Indications and Dosage.*—Oral penicillin preparations should be administered on a fasting stomach, not less than thirty minutes before or not less than one and one-half to two hours after eating.

*Gonorrhea.*—Combined Therapy: A single injection of 100,000 units followed not later than two or three hours by oral doses of 40,000 to 50,000 units each, every two or three hours, for six doses per day for one or two days.

Oral Therapy: Forty thousand to 50,000 units every two or three hours for six doses per day for one or two days.

In complications such as arthritis, endocarditis and epididymitis, administer penicillin parenterally. Concurrent infections of gonorrhea and syphilis should always be considered. Treatment of gonorrhea under the foregoing dosage schedule may prevent the appearance of the chancre and thus mask the first evidence of syphilis. The masking of the chancre should not be construed as a beneficial effect. Blood serologic tests should be made once a month for a minimum of three months.

*Pneumococcic, Streptococcic and Staphylacoccic Infections.*—A minimum of 20,000 to 40,000 units of penicillin parenterally every three hours. After the acute phase and when the temperature has been reduced, treatment may be continued with oral administration. Treat with a dosage of 40,000 to 50,000 units each two or three hours (day and night) for at least forty-eight hours after the temperature has returned to normal. If the condition is not controlled by oral penicillin, return to parenteral administration.

*Prophylaxis.*—Against secondary infections after tonsillectomy or tooth extraction in cases with a history of rheumatic fever or rheumatic heart disease, congenital heart disease and other conditions in which secondary infections may occur (infected teeth or tonsils), administer 100,000 to 200,000 units daily in divided doses from one day before to three or four days after surgery.

*Precautions.*—In meningitis, endocarditis and peritonitis, administer penicillin *only* parenterally. In acute infection with bacteremia or septicemia, parenteral administration of penicillin should be continued until the blood cultures become negative and the acute condition is controlled. Do not use in those conditions listed in Group III and IV under "Sodium Penicillin" and "Calcium Penicillin."

## Topical Products

#### PENICILLIN OINTMENT OPHTHALMIC; PENICILLIN OINTMENT

Penicillin ointment is calcium penicillin in an ointment base composed of wool fat, petrolatum or white petrolatum, or any mixture of two or all of these with or without liquid petrolatum, white wax, yellow wax, cottonseed oil or peanut oil, or any mixture of two or all of these. Its potency is not less than 250 units per gram, and it contains not more than 50 viable microorganisms per gram.

Penicillin ointment is packaged in collapsible tubes, not larger than 1-ounce size, except that ophthalmic ointments shall be in tubes not larger than the one-eighth ounce size.

#### PENICILLIN OINTMENT OPHTHALMIC

*Indications and Dosage.*—Superficial infections of the eye involving the cornea, conjunctiva, meibomian glands and lacrimal sac caused by organisms susceptible to penicillin. Apply one or more times a day as the condition indicates. Supplement local treatment of gonorrheal conjunctivitis with parenteral administration of penicillin.

*Precaution.*—If sensitization occurs, discontinue use.

#### PENICILLIN OINTMENT

*Indications and Dosage.*—Superficial infections of the skin caused by organisms susceptible to penicillin. Apply locally, with or without a bandage, one or more times a day as the condition indicates. If indicated, supplement local treatment with parenteral or oral administration of penicillin.

*Precaution.*—If sensitization occurs, discontinue use.

#### TOPICAL PENICILLIN

Topical penicillin is calcium penicillin which conforms to the standards prescribed therefor under "Calcium Penicillin" but is a fine powder. It may be packaged in vials or in foil enclosures containing not less than 10,000 units or not more than 50,000 units of penicillin.

*Indications and Dosage.*—For postoperative mastoid infections, inject through a small inlying catheter, directly into the cavity, 1 cc. of a sterile solution containing 50,000 units, once a day for a minimum

of four days. In osteomyelitis, parenteral therapy may be supplemented by local instillation with 25,000 to 50,000 units in sterile solution two to three times a day. In empyema after aspiration, instil from 50,000 to 100,000 units into the cavity in a volume of solution less than the quantity of fluid aspirated. In superficial infections of the skin caused by organisms susceptible to penicillin, apply sterile dressings wet with a solution containing 1000 units per cubic centimeter one or more times per day as the condition indicates. If indicated, supplement local therapy with systemic medication.

*Precaution.*—If sensitization occurs, discontinue use.

#### PENICILLIN TROCHES

Penicillin troches are composed of sodium penicillin or calcium penicillin and may contain masticatory substances. The potency of each troche is not less than 500 units. If the product contains masticatory substances, the word "chewing" or "masticatory" shall appear in juxtaposition with the name penicillin troches wherever such name appears on the label and labeling.

*Indications and Dosage.*—In Vincent's infection, allow one troche to dissolve in the mouth. Repeat two or three times a day between meals. Smears should be taken before and after therapy. If indicated, supplement local treatment with parenteral or oral administration of penicillin.

*Precaution.*—If sensitization occurs, discontinue use.

#### PENICILLIN TROCHES (MASTICATORY)

*Indications and Dosage.*—In Vincent's infection, chew two or three troches a day. When high continuous concentrations are desired, chew one troche each hour or two.

*Precaution.*—If sensitization occurs, discontinue use.

#### PENICILLIN DENTAL CONES

Penicillin dental cones are composed of calcium penicillin and may also contain sulfanilamide or sulfathiazole or both. The potency of each cone is not less than 500 units, and the content of viable microorganisms is not more than 50 per gram. If a sulfonamide is used, its quantity is not less than 0.032 Gm. per cone.

*Indications and Dosage.*—Insert a cone after tooth extraction or as treatment for dry socket. Use in conjunction with parenteral therapy in operative procedures.

*Precaution.*—If sensitization occurs, discontinue use.

# SPECIALIST EVALUATES MENSTRUAL GUARDS

AN extensive discussion of menstrual tampons, including a review of opinion surveys among 6500 users, has been published in the *Journal of the American Medical Association* (128: 490, 1945) by Dr. Robert Latou Dickinson of New York City.

Pointing out that a woman needs some type of menstrual guard for periods which add up to five full years of an average lifetime, Dr. Dickinson cites six objections to the more commonly used napkin: (1) possible transfer of contamination from anal opening to urinary and vulvovaginal canals, and from urinary outlet to vagina; (2) more odor than with tampons; (3) requires harness or attachment; (4) unnecessarily bulky both for wear and disposal; (5) chafing; and (6) possible erotic stimulation due to pressure and friction.

In contrast, the tampon absorbs the average total menstrual flow of 2 to 4 ounces with only about one-fifteenth the bulk of external guards, avoids the harness and chafing and minimizes odor.

Some surveys have registered satisfaction by 90% or more of those who tried tampons. But other studies showed as low as 25 or 30% were satisfied. In general, tampons seem to be more often used and better accepted by younger or better-educated groups.

Among women who discontinue the use of tampons after a trial, the objections seem to be rather evenly divided between discomfort, defective protection and dislike. From one-third to two-thirds of tampon users appear to need supplemental protection by an external guard part of the time, especially the first day of the menstrual period.

In evaluating the literature, Dickinson concluded that cramps and inflammation appear in less than 1% of tampon users; apprehension about damming back through the uterus finds scant support; and salpingitis and serious complications are rare.

Some physicians do not view tampons as so harmless, however, and in one survey of medical opinion only 26% favored either general or limited use. The significance of this survey may be in doubt since, according to Dickinson, only 211 usable replies were received from a mailing of 4000 questionnaires.

The increasing acceptability of tampons by women themselves is indicated by an A. C. Nielson survey showing that 1943 sales were five times greater than those of 1937.

*The Isle of Bora Bora*

# A PHARMACIST IN BORA BORA

by ALVIN GOLDBERG, 1st Lt.
MEDICAL ADMINISTRATIVE CORPS

**REMOTE POLYNESIAN ISLAND HELD MANY UNUSUAL EXPERIENCES FOR PHARMACIST WITH BOBCAT FORCE**

AFTER landing on the island of Bora Bora in the Southwest Pacific with the Bobcat Force, I encountered many interesting things among the Polynesian natives while serving as a pharmacist with the 8th Station Hospital.

A medical supply dump was set up near the shore and a tent hospital a few miles down the road. When the rains came the hospital stood up in mud and water. The going was "rough" but all hospital personnel continued to do everything from digging to aiding the sick.

It was during this rainy season that we had a siege of tropical dysentery. Having had it myself, I know that you just don't care what happens to you. The patients filled the hospital up in quick time and medical personnel were busy day and night. Sick call was like a chow line. We practically exhausted our supply of paregoric and tincture of opium. I remember making up tincture of opium from some opium powder. Not having the equipment for assaying, I diluted the final product by guess and all worked out surprisingly safe and well.

For many months "C" ration was our principal diet. Making up a meal was reminiscent of compounding a prescription. There were powdered eggs, powdered potatoes and powdered cabbage. With *aqua, q. s.*, one gets an amazing meal.

The mosquitoes at Bora Bora welcomed us enthusiastically. These insect marauders were the carriers of the dreaded disease filariasis. I recall telling one of the inhabitants that the mosquito was the carrier of filariasis. The native laughed. What! A little insect cause enlargement of the extremities? He believed that filariasis was due to frequent bathing in salt water when one has a break in the skin from a wound.

One sunny afternoon I noticed a native pulverizing small pieces of volcanic rock into a fine powder. To this he added small quantities of coconut oil until the final product became a thick paste. This rock paste was used for inflamed skin surfaces to draw out the pus. It certainly would irritate anything. The natives seem to have their own island "formulary."

The use of sulfonamides for the treatment of various skin infections was hailed by the natives as a miracle and most of them learned to respect and to lose their fear of the American doctor.

I once noticed a native dropping liquid into a child's ear. Upon investigation, I discovered that the liquid was warm coconut oil, a treatment still used by many here in the United States.

Walking past a native hut one afternoon, I saw a young woman of twenty practically nude lying on a straw mat. Her face was contorted in pain as her husband massaged her body with coconut oil. To the left of the girl I noticed a strange sight. Parallel to her body were pieces of coconut, native bread, bread fruit and various other fruits. This mysterious ritual was cleared up when I was told that the woman was pregnant and the food by her body was an offering to the

**ABOUT THE AUTHOR**

Lt. Goldberg, an alumnus of Rutgers University College of Pharmacy, served two-and-a-half years in the South Pacific as an enlisted man with the duty assignment of pharmacist. After receiving his commission in 1943, he became an assistant to a transport surgeon on duty in Africa and Italy. At present Lt. Goldberg is pharmacy officer and hospital inspector at the Station Hospital, Camp Livingston, La.

God of Pain. Many natives still follow this trend of thinking.

Giving birth is just another day's work for the average Bora Bora woman. If the busy native nurse does not have time to deliver the baby, the pregnant woman tells her relatives to get busy. A rope is looped around her body under the armpits, and the end of the rope secured to a stationary structure. She then pulls on the rope to increase muscle contraction. After birth the umbilical cord is cut with a sharp piece of glass or other cutting utensil. Coconut oil is used on the child daily after its birth. Pituitary extract was finally introduced by the native nurse and used with great success for childbirths. This nurse studied in Tahiti and greatly helped to increase the health standards of the natives.

I asked a native about antiseptics. He smiled and pulled down some fruit from a nearby tree. As he cut the fruit a thick orange juice exuded. The exudate was gummy and formed a coating when applied to the skin. He claimed that it worked wonders in that it protected and constricted the skin.

A handful of Chinese descendants of a group that migrated from Hong Kong many years ago had intermarried with some Polynesian women here. Many of these people raise vanilla beans of the type common around the Tahiti section of the Pacific. After exposure to the sun the long beans have a dark color and a definite vanilla odor. I made a tincture of vanilla from the beans and obtained a very strong product that made an excellent flavoring agent for medications.

I always maintain that pharmacists are very important to the armed forces, and under overseas conditions such as those described the pharmacist's knowledge and ability have especial value. From my observations I am convinced that the pharmacist and physician make a good combination in the Army as well as in civilian practice.

Many Medical Administrative Corps officers who were pharmacists prior to entering the Army have been of great help to the physicians as Battalion Surgeons' Assistants. Medical officers were relieved for places requiring their urgent medical services. The job of assistant to the Transport Surgeon is also well suited to the pharmacist. His knowledge of materia medica and related subjects is invaluable in handling sick call and giving first aid. Many MAC officers have proved their ability as pharmacy officers in hospital installations by professional organization. Army pharmacists of enlisted man's rank likewise have had a very important and responsible job. They have worked with a professional skill that deserves recognition.

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## METHOD CHANGED FOR FILING FORMULAS FOR DRAWBACK

Pharmacists and others who intend to file tax drawback claims on distilled spirits used in nonbeverage products after April 1, 1946, must submit new quantitative formulas for such products, according to an amendment to Regulations 29 by the Bureau of Internal Revenue. The formulas must be submitted in triplicate on Form No. 1678, before January 1, 1946, to the Deputy Commissioner, Alcohol Tax Unit, Bureau of Internal Revenue, Washington 25, D. C.

Exempted from this requirement are preparations in official compendia (and, of course, prescriptions).

A new series of numbers must be given the formulas, beginning with number 1 and continuing in sequence. Amended or revised formulas will be considered as new formulas and serially numbered accordingly. Pharmacists claiming drawback on products produced between January 1 and March 31, 1946, for which quantitative formulas have not previously been filed, should observe the procedure currently required.

After April 1, formulas for nonbeverage products must be submitted before or at the time the product is first manufactured. One of the three required copies will be returned, either approved or disapproved for purposes of obtaining tax drawback on the distilled spirits to be used. Returned copies of formulas must be serially filed and available for examination by internal revenue officers.

# PENICILLIN FORMULAS FOR TOPICAL USE

TWO penicillin formulas for topical use on prescription have been developed in the Department of Pharmacy at the Massachusetts College of Pharmacy in Boston.

Penicillin preparations containing water, such as those described below, are unstable even when prepared under aseptic conditions. Only freshly prepared products may be dispensed, and physicians should be advised that the potency will be questionable after a few days' storage in the refrigerator.

The pastilles may be prescribed for oral infections of the mouth and throat and the suppositories for susceptible local infections of the vagina.

### Gelatin Pastilles of Penicillin

| | |
|---|---|
| Penicillin (sodium or calcium) | 100,000 units |
| *Gelatin | 50.00 Gm. |
| Simple syrup | 70.00 cc. |
| Distilled water | 75.00 cc. |
| Soluble saccharin | 0.50 Gm. |
| †Butoben | 0.05 Gm. |
| Oil of lemon | 0.50 cc. |

Heat a mixture of the simple syrup, 72 cc. of the distilled water, the soluble saccharin, and the Butoben until the soluble saccharin and the Butoben have dissolved and the solution has reached its boiling point. Pour this solution upon the gelatin contained in a beaker of about 400-cc. capacity, and stir until the mixture is of uniform consistency. When the mixture has cooled to a temperature of 50° C., add the oil of lemon and the penicillin previously dissolved in 3 cc. of distilled water, and mix well. Pour the product upon a porcelain or glass surface in such a manner that a sheet, approximately 9 in. x 9 in. and of uniform thickness, is obtained. A convenient method of obtaining a sheet of the correct dimensions is to outline a square, 9 in. x 9 in., by pouring a thin stream of the material upon the porcelain or glass surface. The remainder of the warm material is poured within the square thus outlined.

Allow the poured material to cool for about a half hour. Remove the sheet carefully, dust both sides of it with talcum, and cut into pieces weighing approximately 1 Gm. each. A troche cutter having an internal diameter of 18 mm. will produce pastilles of approximately the correct weight. When the pastilles have been cut, they should be tumbled with talcum on a sheet of paper in order to dust the cut surfaces. *The prepared pastilles must be preserved in a refrigerator* at a temperature below 10° C.

Pastilles prepared in the manner outlined above and weighing approximately 1 Gm. will contain about 500 units of penicillin, a strength which has been found satisfactory in the treatment of Vincent's infection and streptococcal and other bacterial infections of the mouth and throat susceptible to penicillin.

The pastilles are employed in the treatment of oral infections by placing a pastille in the buccal sulcus and allowing it to remain there undisturbed for as long as possible. When the last of the pastille has disappeared, another is used.

Gelatin pastilles of penicillin should be dispensed in tightly closed glass containers.

### Gelatin Suppositories of Penicillin, Vaginal

| | |
|---|---|
| Penicillin (sodium or calcium) | the prescribed quantity |
| Gelatin | 40.000% |
| Butoben | 0.025% |
| Distilled water, *q. s. ad* | 100.000% |

Dissolve the penicillin in about 3 cc. of the distilled water. Add the Butoben to the remainder of the distilled water, heat the mixture to boiling, pour it upon the gelatin, and stir until the mixture is of uniform consistency. When the mixture has cooled to a temperature of 50° C., add the solution of the penicillin, mix well, and pour the product into molds which have not been chilled. Allow to stand at room temperature until the suppositories have hardened. Remove the suppositories from the molds, dust them with talc, and place them in individual glass containers. *Store in a refrigerator* at a temperature not above 10° C.

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A survey of 91,025 *prescriptions* filled in a representative cross section of United States pharmacies reveals that 48.1% of prescriptions are for tablets, capsules or pills, 42.8% are for liquids, 3.9% for powders and 5.2% for ointments. The study, conducted by the Owens-Illinois Glass Company, is continuing and final data will be reported later.

* Either Knox Gelatin, available in food stores, or Pharmagel B may be used. If gelatin from another source is used, experiments should be performed to determine the correct amount.

† Butoben, Merck, is butyl parahydroxybenzoate. It is used in this preparation as a preservative. Its use is optional, assuming the pastilles are kept under continuous refrigeration.

# A STUDY OF ALCOHOL–CITRATE INCOMPATIBILITY

by RAYMOND E. SCHMITZ and JAMES S. HILL

STINES DRUGSTORE NO. 3, NIAGARA FALLS, N. Y.

**PRACTICAL METHOD OF PREDICTING AND PREVENTING SPLIT SOLUTIONS DEVELOPED FOR PRESCRIPTION USE**

PRESCRIPTIONS for Tincture of Hyoscyamus, Potassium Citrate and an alcoholic vehicle have frequently caused considerable trouble to pharmacists. This combination may produce a good clear mixture or it may yield a product that quickly separates into two layers. This study was undertaken to determine the causative factors and a method of predicting and preventing the occurrence of the splitting phenomenon.

It is well known that the most important factor in this incompatibility is Alcohol. Alcohol in the presence of Potassium Citrate Solution yields a mixture that rapidly separates into two distinct layers. A definite safe ratio for Potassium Citrate, water and Alcohol mixtures was determined as the result of work represented in Table No. 1.

**TABLE NO. 1: ALCOHOL-CITRATE EFFECT**

| *VOLUME POTASSIUM CITRATE SOL.* | *VOLUME WATER* | *VOLUME ALCOHOL U. S. P.* | *RESULT* | *PER CENT POTASSIUM CITRATE, W/V* | *PER CENT ALCOHOL U. S. P., V/V* | *FACTOR NUMBER* |
|---|---|---|---|---|---|---|
| 1.5 cc. | 1.5 cc. | 2.2 cc. | Clear | 14.4 | 42.3 | 56.7 |
| 2.0 cc. | 1.5 cc. | 2.3 cc. | Clear | 17.2 | 40.0 | 57.2 |
| 2.5 cc. | 1.5 cc. | 2.2 cc. | Clear | 20.0 | 35.5 | 55.5 |
| 5.0 cc. | 1.5 cc. | 3.1 cc. | Clear | 26.0 | 32.3 | 58.3 |

The Alcohol used was colored with a few drops of Amaranth Solution. A 50% potassium citrate solution in water was prepared. All measurements in Table No. 1 and subsequent tables were made with a volumetric burette.

The 1.5 cc. of water was placed in a test tube and the designated amount of potassium citrate solution was added and well mixed. The colored Alcohol was then added drop by drop until the resulting solution split into two distinct layers, at which point the volume of Alcohol used was recorded. Using the same amounts of potassium citrate solution and water as before, 0.1 cc. less Alcohol was added. This gradual reduction in the amount of Alcohol resulted in a permanent solution of potassium citrate, water and Alcohol. This solution would separate into two layers if 0.1 cc. of Alcohol were added. Using this method, a solution permitting the maximum toleration of Alcohol in each case was prepared. This was chosen as our end point.

The alcohol-water-citrate splitting is so sensitive that 0.1 cc. of Alcohol may determine whether a perfect or a split solution is obtained. The percentage figures shown in Table No. 1 are the highest that will permit a clear solution.

Because in any prescription of this kind the percentage of the Potassium Citrate and of the Alcohol will vary within wide limits, we prefer to base the correction factor for Alcohol and Potassium Citrate on one fairly constant number rather than on two variable numbers. It will be noted in Table No. 1 that the per cent of Potassium Citrate varies from 14 to 26% and that of Alcohol from 42 to 32%. However, the sum of the percentages of Potassium Citrate and Alcohol in any horizontal column equals a fairly constant number, as shown in the last column of Table No. 1. Therefore, if we use the lowest number in this factor column we are able to predict the splitting of any mixture of Alcohol, water

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**TABLE NO. 2: ALCOHOL-SYRUP-CITRATE EFFECT**

| VOLUME POTASSIUM CITRATE SOL. | VOLUME WATER | VOLUME SYRUP U. S. P. | PER CENT SYRUP | VOLUME ALCOHOL U. S. P. | RESULT | PER CENT POTASSIUM CITRATE, W/V | PER CENT ALCOHOL U. S. P., V/V | FACTOR NUMBER |
|---|---|---|---|---|---|---|---|---|
| 1.5 cc. | 0.75 cc. | 0.75 cc. | 16.3 | 1.6 cc. | Clear | 16.3 | 34.7 | 51.0 |
| 2.0 cc. | 0.75 cc. | 0.75 cc. | 14.6 | 1.6 cc. | Clear | 19.6 | 28.5 | 48.1 |
| 5.0 cc. | 0.75 cc. | 0.75 cc. | 8.9 | 1.9 cc. | Clear | 26.7 | 22.6 | 49.3 |

and Potassium Citrate. If the sum of the percentages of the two troublesome substances is below 55, a clear solution will result. If the sum is above 55, separation always occurs. We shall call this the "alcohol factor."

This alcohol factor of 55 is not, however, the complete answer to the problem, since it relates only to alcohol-citrate-water mixtures. When applied to elixirs it does not hold. The reason for the failure of the alcohol factor is due to other substances dissolved in the elixirs and in the alcoholic tinctures. Syrup has been mentioned by Husa[1] as a factor in splitting mixtures of this type.

To find the effect of Syrup U. S. P. on the alcohol factor, the following experiment was undertaken. The same procedure as outlined for Alcohol in Table No. 1 was followed with the exception that 1.5 cc. of a 50% water-syrup solution was used in place of distilled water alone. The results are shown in Table No. 2.

In this experiment it was found that the amount of Alcohol tolerated by Potassium Citrate in the presence of Syrup is definitely less than

**A SPLIT SOLUTION (left), which characterizes the alcohol-citrate incompatibility, can be predicted and avoided by use of a correction factor.**

when Syrup is absent. Therefore we can state that Syrup is a contributing factor in the splitting of the solution and has a definite relation to the reduction of the alcohol toleration and alcohol factor of 55.

A study of Tables No. 1 and No. 2 shows that Potassium Citrate in the presence of 16.3% of Syrup will tolerate 7.6% less Alcohol; 14.6% of Syrup will tolerate 11.5% less Alcohol; and 8.9% of Syrup will tolerate 9.7% less Alcohol. Thus it is seen that Syrup exerts its greatest splitting effect at 14.6%.

A study of the factor column in Table No. 2 reveals that the factor is fairly constant. The lowest figure—48—becomes the "alcohol-syrup factor."

The use of 48 as a correction factor for the problem when applied to a mixture of Elixir of Phenobarbital, Tincture of Hyoscyamus and Potassium Citrate resulted in a split solution. As this elixir contains Alcohol, Syrup and Glycerin, it was necessary to study the effect of Glycerin on the splitting phenomenon of Alcohol and Potassium Citrate

Using the same procedure as outlined previously, with the exception that 1.5 cc. of a 50% solution of Glycerin was used in place of distilled water, the following results were obtained. (See Table No. 3.)

By comparison with Table No. 1, it is found that Alcohol and Potassium Citrate in the presence of 13.4% Glycerin tolerates 4.2% more Alcohol, whereas the presence of 8.3% Glycerin requires 4.6% less Alcohol. From this it is seen that a concentration of less than 11% Glycerin has a disturbing influence on the alcohol factor. Above 11% it has a stabilizing effect. This stabilizing effect is more pronounced at 13%.

A brief study of the effect of Glycerin and Syrup on the alcohol factor indicated that the stabilizing effect of Glycerin is not exerted to any appreciable extent in the presence of 11.5% Syrup.

By experimental data we have established an alcohol factor of 55 and an alcohol-syrup factor of 48. Since the splitting action is sensitive to 0.1 cc., for practical purposes we feel justified in lowering the alcohol factor to 50 and the alcohol-syrup factor to 40, which is the correction factor.

A brief study of Potassium Citrate in solution shows that any given weight of the salt occupies, in terms of volume, approximately 50% of its weight. That is, 60 Gm. Potassium Citrate when in solution occupies 30 cc. of volume. When this volume effect of Potassium Citrate is considered with the correction factor of 40, we are able to produce a clear solution in the presence of Elixir of Phenobarbital which contains Alcohol, Syrup and Glycerin.

The following prescription will serve as an example of the use of this factor:

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| | |
|---|---|
| Potassium Citrate | 15 |
| Tincture Hyoscyamus | 15 |
| Elixir Phenobarbital, *q.s.* | 60 |

Because of the 50% volume effect of Potassium Citrate in solution, the 15 Gm. of Potassium Citrate will occupy only 7.5 cc. of volume. This, when added to the 15 cc. of tincture leaves 37.5 cc. of Elixir of Phenobarbital to be added. By calculation it is found that 25% of Potassium Citrate and about 30% of Alcohol are present, which when added together give an alcohol-syrup factor of 55 and should cause distinct layering or splitting. This was found to be so.

By substituting water in place of an equal amount of the elixir, to reduce the factor number to 40, a clear solution should result and this was also found to be correct. It was also found that the solution remained clear after standing over one week.

Thus it is seen that, in order that an alcohol-citrate solution may be permanent, the sum of

**TABLE NO. 3: ALCOHOL-CITRATE-GLYCERIN EFFECT**

| *VOLUME POTASSIUM CITRATE SOL.* | *VOLUME WATER* | *VOLUME GLYCERIN* | *PER CENT GLYCERIN* | *VOLUME ALCOHOL U. S. P.* | *RESULT* | *PER CENT POTASSIUM CITRATE, W/V* | *PER CENT ALCOHOL U. S. P., V/V* | *FACTOR NUMBER* |
|---|---|---|---|---|---|---|---|---|
| 1.5 cc. | 0.75 cc. | 0.75 cc. | 13.4 | 2.6 cc. | Clear | 13.4 | 46.4 | 59.8 |
| 2.5 cc. | 0.75 cc. | 0.75 cc. | 11.5 | 2.4 cc. | Clear | 19.2 | 36.9 | 56.1 |
| 5.0 cc. | 0.75 cc. | 0.75 cc. | 8.3 | 2.5 cc. | Clear | 27.7 | 27.7 | 55.4 |

the percentages of Potassium Citrate and Alcohol must be below 55, preferably about 50. Where syrup is present the factor for alcohol and citrate is 48, preferably 40.

If the per cent of Potassium Citrate added to the per cent of Alcohol, which can be calculated, is over 48 to 50, a definite split will result. An adequate quantity of water should be added in place of the alcoholic elixir to bring the sum preferably down to 40, which is the "correction factor."

(*Continued next column*)

## ABOUT THE AUTHORS

**James S. Hill,** Canadian born, came to the U. S. to study pharmacy at the University of Buffalo. After graduation in 1926 he was employed by Stines Drugstore in Niagara Falls. Eight years later he formed a partnership with his employer to open his present pharmacy. Practicing pharmacy and forgetting about side lines, says Mr. Hill, gives the staff time to study the problems which arise in good prescription practice. Investigative work in his pharmacy, of which this paper is an example, has built prescription volume, has kept the professional morale of pharmacists at a high level and resulted in increased prestige among both physicians and laymen. Mr. Hill is vice-president of the Western New York branch of the AMERICAN PHARMACEUTICAL ASSOCIATION, vice-president of the College of Apothecaries and is active in the work of several other organizations.

**Raymond E. Schmitz,** one of Mr. Hill's associate pharmacists and co-author of this paper, graduated from the University of Buffalo in 1935. After several years as a detail man for a manufacturing laboratory, he entered Mr. Hill's employ in 1942. Here he found an atmosphere of professionalism that encouraged the ideals instilled by twelve years of apprenticeship under several preceptors "of the old school." Like Mr. Hill, he is an ardent advocate of original investigative work in the retail pharmacy. He "cannot believe" that other pharmacists do not also "solve some of their own problems, but perhaps do not think their work is worthy of publication."

To such pharmacists, THIS JOURNAL extends an invitation to share the answers developed for prescription problems with fellow members of the A. PH. A. and state associations through our pages.


## Summary

It has been shown that solutions of Potassium Citrate and Alcohol separate into two distinct layers when the sum of the per cent of each is above 55. This number is called the "alcohol factor" and its use in predicting incompatibilities of this type is justified. If this number is lowered to 50 it is more reliable.

Syrup increases the splitting effect of Alcohol in the presence of Potassium Citrate. This effect of Syrup is greatest at 14.6% in the amounts studied, thus justifying the correction factor of 40 when Syrup is present.

In the amounts studied, Glycerin above 11% exerts a stabilizing effect, and below 11% acts as a disturbing influence. However, the stabilizing effect is nullified in the presence of 14.6% or more Syrup.


### REFERENCES

1. Husa, W. J., and Webb, H. M., THIS JOURNAL, **26**, 903 (1937).

## PENICILLIN TRIED FOR NEUROSYPHILIS

Penicillin shows "a clear effect on the blood serologic reactions in neurosyphilis and an even greater effect on the elements of the spinal fluid," the important criteria in treating such cases where the central nervous system has been attacked. This conclusion is based on a study of 89 patients at the Institute for the Control of Syphilis, University of Pennsylvania, in which the U. S. Public Health Service cooperated (*J. Am. Med. Assoc.*, 128: 651, 1945).

For the tests, sodium penicillin in aqueous solution was given intramuscularly for eight days, every three or four hours, for a total dose of 1.2 or 2.4 million units. A few patients received 3 or 4 million units. The larger dose is preferred, and better results are obtained when given in two courses.

The investigations are to be continued and will employ a total dose of 4.8 million units, twice as large as the dose previously used.

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**JAMES H. BEAL, founder of this Journal and for many years the leading figure in American pharmacy, died at his home in Fort Walton, Fla., on September 20 at 83 years of age. He was senior past president of the Association and recipient of the first Remington Medal. (As announcement of this great loss came at press time, please see next month's Journal for additional information.)**

# The Hospital Pharmacist

EDITORIAL

by LEO F. GODLEY

AMERICAN SOCIETY OF HOSPITAL PHARMACISTS

NOW that the war is over hospital pharmacy faces the opportunity to accomplish the things that have caused much planning and wishing and dreaming. At conventions, in editorials, in private correspondence and by telephone we have heard many times what would be done when peace came. Now is our first opportunity. We must produce! Let it not be said that we were ensconced on a bed of excuses made plausible by the war.

First there will be a reshaping of the hospital pharmacy staff qualitatively and quantitatively.

Institutions are crying for pharmacists—many that have never employed them before. How much better it would be for the institution to employ pharmacists who have already had good hospital training. Especially would this be true in sections of the country that do not yet have an aggressive group of hospital pharmacists. It is part of our duty to foster such a plan if possible.

Imagine how unfair it would be to expect a pharmacist, without help, to pick up where hospital pharmacy stands today if he has had no hospital training. Yet, we are going to have much of this unless we can promote the proper distribution of trained hospital pharmacists to sustain our interests and ideals.

There are men who will feel that they need something on the order of a refresher course before accepting a position. Colleges and hospital pharmacies undoubtedly will offer and suggest help. More colleges should publicize their special programs for pharmacists veterans.

As staffs become fixed and adjusted to peacetime needs, hospital pharmacy will be ready to cooperate in its ascension under the minimum standards proposal which is being formulated. This idea was conceived before the war and has been worked upon by appointed committees under the auspices of the American Society of Hospital Pharmacists.

This code of standards will offer ideas as to the type and extent of needed remodeling of the pharmacy. It will set standards and limitations for an internship period. Standards for floor space, equipment, library and staff will be established. It will constitute a veritable insurance for hospitals as well as pharmacy.

In most states, hospital pharmacy does not have a legal attachment with the state board of pharmacy. Whether or not these pharmacists and pharmacies meet the state's requirements of character, education, practice and experience is a matter of concern only to the pharmacist and the institution involved. This specious arrangement and also the evaluation of hospital pharmacy experience for licensure are among the urgent situations that confront us.

Research in the hospital pharmacy is definitely in order. A well-equipped laboratory for working out the problems that present themselves in the daily routine should be included in the remodeling of old and the building of new pharmacies. This laboratory will be of much value in connection with manufacturing and assaying, and also in problems that occur concerning such products as sterile solutions, blood and blood fractions and allergenic preparations.

Hospital pharmacy will need these postwar plans; and they must be instituted quickly and well. With these come the assurance and the satisfaction that we can "fit in" and serve with merit in any medico-social picture which might evolve from the present melting pot of plans.

# PENETRATION AND ABSORPTION OF DRUGS FROM OINTMENTS

by M. L. NEUROTH and C. O. LEE

SCHOOL OF PHARMACY, PURDUE UNIVERSITY

THERE seems to be an increasing tendency on the part of dermatologists to base their selection of preparations for the treatment of skin disorders upon two related factors: (1) the type of therapeutic action desired, which involves choosing an ointment base designed to produce the desired penetration of medicament, and (2) the individualization of vehicles in accordance with therapeutic aims and special needs.

Special consideration of absorption and penetration is necessary to control the therapeutic activity of chemicals applied externally or to increase the effectiveness of the medication. Furthermore, there have been cases of poisoning reported from excessive absorption. Allergic conditions are also produced occasionally by drugs contained in the new water-soluble type of ointment vehicles. It may be possible, however, to reduce the necessary concentration of the active ingredients by the use of an appropriate ointment base.

Several workers[1, 2, 3] have pointed out that greasy ointments are undesirable because they prevent the escape of heat from an inflamed and diseased area. The serous discharge of a wound is aqueous and cannot penetrate the greasy layer of an ointment, nor can the medicament be transferred satisfactorily to the diseased tissue. The older type of fatty base is said to be indicated for the surface of an oily intact skin, but if the surface is moist the fat bases are of no value.[4]

It is evident from the results of numerous investigations that certain therapeutic agents incorporated into bases composed of wax, petrolatum, fats, and oils are not absorbed by the skin as readily as when these same agents are incorporated into the newer hydrophilic bases which contain relatively large quantities of water. High water content and the presence of oxycholesterol were found to improve the antiseptic value of certain ointments.[5]

Several investigators[6, 7, 8] reporting on antiseptic ointments have proved that their efficiency is much diminished or entirely absent when the usual fat, oil or wax bases were used. On the other hand when o/w emulsion bases were used the germicidal value was greatly enhanced.

Seelman[9] reported experiments to validate his conclusions that two different vehicles may penetrate the skin equally well, but show widely different systemic reactions. He also is of the opinion that vehicles should be individualized in accordance with the drugs used, the therapeutic aim, and the special needs of the disorder to be treated.

The newer ointment vehicles are said to owe their virtues to the presence of substances which act as emulsifying agents and surface tension depressants.[10]

Brown and Scott[11] stated that it has generally been considered that a substance must possess both oil and aqueous solubility in order to penetrate human skin. An extremely high or low partition coefficient is less conducive to absorption than intermediate values.

Although a great many formulas have been advanced recently which contain one or more of the new hydrophilic substances, relatively few have been subjected to pharmacological tests. Histological examination of the skin after definite periods of application has not been used extensively.

Sulzeberger, in discussing the work of Duemling,[12] stated that "dermatologists will have to be more precise about what is to be accomplished with medicaments when applied to the skin. In other words, how far, and how much do we want them to penetrate?"

Seelman[9] pointed out that in dermatologic

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practice the question of penetration is far more important than that of absorption, and that penetration cannot be measured in terms of systemic reaction.

Goodman[13] insisted that the conventional ideas and concepts of ointment bases called epidermic, endermic, and diadermic are acceptable. However, he recognized the controversy regarding the limitations or possibilities of this classification of ointment bases. He criticized the U. S. P. XII Yellow and White Ointments stating that they did not lend themselves to general prescription use and that they interfere with penetration through the skin.

## Control of Activity Doubtful

While it is recognized that penetration and absorption of therapeutic agents do vary with the type of vehicle employed, it does not seem to be generally accepted that an ointment base can be prepared which will control the level of activity. However, the AMERICAN PHARMACEUTICAL ASSOCIATION, through its laboratory and in conjunction with Dr. Werner Duemling, began such studies several years ago. It has been the hope that ointment bases of known penetrating ability could be developed.

Busse[14] reviewed the literature pertaining to the value of ointment bases as carriers for antiseptic agents and the influence of various substances upon systemic absorption. In his summary and conclusions it is brought out that: (1) No universal ointment base has yet been developed. (2) Claims for the water-containing bases have not been fully justified. (3) Ointment bases of any type hinder or delay absorption through the intact epidermis. (4) Aging of ointments containing antiseptics destroys their germicidal efficiency. (5) Properties peculiar to the active substance may determine whether it will be absorbed. (6) A factor in determining or regulating the rate of absorption is the ratio of the surface of the preparation to its volume. (7) General confusion has arisen as to just what type of ointment base to use.

Although the speed, amount or level of absorption from the different bases may be of theoretical interest, the practical implication has to be considered as well. The drug incorporated into these bases, for example, may tend to be more toxic or allergenic when carried by certain types of vehicles.[12] Mercurials, phenolic derivatives, dyes, etc., may be dangerous when incorporated into bases containing a relatively large quantity of water. Fatalities are reported in the case of external application of sulfur[15] and of salicylic acid.[24]

The object of this paper is to cite many methods which have been used in evaluating ointment bases, particularly those concerned with an attempt to measure penetration, systemic absorption, or both.

One of the earliest attempts to explain the difference in behavior of phenol in oil and in water was made by Wolfhügel and von Knorre.[16] A 5% solution of phenol in oil was brought into direct contact with water and the amount of phenol diffusing into the water was determined. Tribromophenol was formed and the excess bromine titrated. The amount which diffused was negligible compared with that which went from an aqueous solution over to an oil.

Luff[22] described experiments to measure absorption of drugs from ointments spread upon the skin. Ointments containing soluble drugs were placed inside a sheep's bladder; the bladder was suspended in a beaker of distilled water and kept at a uniform temperature of 98° F. in a water bath. Three different bases were used, namely, petrolatum, lard, and lanolin. Exosmosis of potassium iodide was of the following order: from petrolatum in one hour, from lard in nine hours, and from lanolin nil at the end of twenty-four hours. Exosmosis of phenol and resorcin was of the same order.

The author concluded that if an ointment is employed with the view to absorption of its active constituents, then petrolatum is by far the best of the vehicles tested; but if an ointment is employed for the local effect only, then lanolin is the best excipient for such an ointment.

Breslauer[17] concluded that lanolin and cold creams were the best bases for antiseptics. Cultures of the test organism were grown on agar. The colonies were transferred to 2 cc. of bouillon, agitated, and filtered; glass platelets were introduced into the bouillon suspension for a short time, then removed and dried on a Petri dish. The platelets were next introduced into the ointment, then removed after a definite period and washed with ether to remove the ointment. Finally, these platelets were transferred to sterile tubes containing bouillon and the mixture observed for growth of organisms.

Brown and Scott[11] studied the absorption of methyl salicylate and certain salicylate esters by the human skin. In these tests the combined surface of both hands was used as an area of application for one hour. The skin area was scrubbed with hot soapsuds, rinsed, and dried. The subject carried out the massage on himself. All visible traces of the material applied were removed promptly after the test by rubbing with toweling. Contact of the skin with water was carefully avoided for four hours. The urine was voided and discarded prior to the test, then collected for twenty-four hours. The volume was measured and a composite sample analyzed for salicyl. The first succeeding sample was also analyzed and, if found positive, further samples were taken until it was evident that no more salicyl was being excreted.

The analytical procedure used to analyze the urine for salicyl was that of Thoburn and Hanzlik.[19] This method is based upon the distillation of urine followed by a colorimetric estimation conducted with ferric alum.

The data from tests conducted by continuous immersion in 50% solutions of methyl salicylate indicate that absorption from olive oil and lard oil was approximately equal, that from liquid petrolatum and lanolin was 26% and 66% higher, respectively. When these results were compared with values for pure methyl salicylate it was observed that absorption was increased 35% with olive oil and lard oils, 65% with liquid petrolatum, and 118% with lanolin. The presence of these substances substantially raised the degree of penetration.

On the other hand, absorption from 20% ointments of methyl salicylate with lanolin, benzoinated lard, and petrolatum was extremely slight. The average was only 6% of the amount of salicyl taken up from the plain ester under analogous conditions. From the average it was concluded that the total absorption of salicyl was practically unaffected by the vehicle used as an ointment base.

Sauerland[20] reported some variation in absorption from the epidermis of both methyl salicylate and spirosal, dependent upon the type of ointment selected. The order was as follows: petrolatum 1.25, lard 1.00, and lanolin 0.27 for methyl salicylate; petrolatum 7.1, lard 1.0, and lanolin 9 for spirosal. The method used did not take into account the possible excretion of the absorbed ester in unchanged form or excretion of the ester in some chemically conjugated form.

Moncorps[21] measured the amount of salicylic acid eliminated in the urine after application of dermatological salve bandages. The following gradation was observed: benzoinated lard, paste of zinc oxide, petrolatum, lanolin with 20% water, "physiol. A," "physiol. B," eucerin with 50% water, and "physiol. C."

The most widely used method for measuring the effectiveness of antiseptics when incorporated in paste and ointment type vehicles was developed by Reddish.[24] *S. aureus* of normal resistance was grown at 27° C. in beef broth and transferred in this medium for three consecutive days. One-tenth of a cubic centimeter of the culture was added to 15 cc. melted nutrient agar at 45° C. (1.5% agar in the broth base), poured into a sterile Petri dish and allowed to cool at room temperature. Salves or ointments were then melted at 37° C. and spread over a small surface of the inoculated agar with a sterile glass rod. Melted sterile petrolatum was spread on another part of the agar. A duplicate test was made with the melted salve or ointment, and a petrolatum control made on the bottom of a sterile Petri dish. The width of the clear zone around the preparations was taken as a measure of the antiseptic value. Plain 1.5% agar is said to simulate conditions met with in skin and wounds. "It is permeable, semi-solid, isotonic, and constitutes a valuable laboratory means of approximating the conditions found in human and animal tissues," etc.

## Testing Antiseptic Ointments

Many slight modifications of the above procedure have been used with good results. Thus Husa and Radin[7] made smears on inoculated agar media with glass rods and ointments at room temperature. Craw and Lee[25] spread 0.5 Gm. of ointment on a $^3/_4$-inch round cover slip, which was then pressed against the upper surface of solidified agar inoculated with *S. aureus*. The clear zone around the ointment was taken as a measure of antiseptic action.

These same authors prepared agar plates as in the previous test, but cut a piece from the center with a sterile cork borer. One gram of ointment was melted and poured into the cavity. Melted ointment was also poured into a sterile Petri dish and inoculated agar media poured over the ointment. No attempt was made to compare the results of the several methods.

Gershenfeld and Miller[26] used the official agar plate method (page 12, Circular 198, F. D. A. Methods of Testing Antiseptics and Disinfectants).

Foley and Lee[8] used *S. aureus* test organism and employed the U. S. Department of Agriculture agar-plate and agar-cup-plate methods as outlined in Circular No. 198. The relative value of the methods was not determined.

Seelman[9] reported a method for measuring the absorption of drugs and poisons through the skin. A few cubic centimeters of melted lard containing 2% of salicylic acid were run into a test tube and allowed to harden. The solid was then overlayed with a few cubic centimeters of a 20% solution of ferric chloride.

The color reaction diffuses quickly throughout supernatant fluid, demonstrating diffusion of salicylic acid into the aqueous ferric chloride solution. The same experiment, except that petrolatum was used in place of lard, showed that no appreciable amount of salicylic acid diffused into the iron solution. The author contended that these results proved that two different vehicles may penetrate the skin equally well but show widely different systemic action.

Another experiment conducted by Seelman[9] is offered to indicate that the problem of skin penetration and absorption of substances into the circulation involves many physiochemical and biologic considerations. A strip of blue litmus paper moistened with water was placed on a glass slide and covered with official boric acid ointment. After several hours the litmus was still blue, showing that there had been practically no penetration of the boric acid.

## Macht's Absorption Studies

Macht[28] stated that he studied absorption of drugs in various ointment bases in 1932–1933. Petrolatum, lard, hydrous wool fat, a synthetic proprietary of cholesterol, goose grease, bear fat, greaseless creams, lotions prepared with olive oil, cottonseed oil, lard oil, mineral oil, and peach kernel oil were used. Iodine 1%; phenol 5%; strychnine 0.1%; mercuric chloride 1%; thallium salts and a complicated synthetic organic sulfur compound (tetramethylthiuram monosulfide) 5% were applied in the form of ointments and liquid preparations to the shaved skin of rabbits and guinea pigs. The treated areas were covered with oil paper, bandage, and adhesive tape to assure prolonged contact. The results of this work are summarized below:

(1) Iodine was excreted in the urine. (*a*) The ointment penetrated no better than the liquid preparation. (*b*) Inorganic iodine was excreted in the urine in organic combination.

(2) Fixed fats carrying potent drugs were not absorbed very readily.

(3) Hydrous wool fat was more efficient than other fats.

(4) Penetration of the normal epidermis was very slight in the case of drugs contained in fats such as olive oil, linseed oil, and in liquid petrolatum.

(5) As a part of the work it was shown that chemicals and certain physical measures which damaged superficial cells, such as glycerite of tannin, silver nitrate, phenol, freezing or scalding of mucous surfaces interfered with absorption. Marked absorption occurred when a burn was produced by actual cautery.

In a discussion of Macht's article Dr. Theodore Cornblett spoke of his own observations with respect to certain ketone bodies. He found that such substances, which occur ordinarily on the skin surface in sweat, penetrate the skin with difficulty when there is a dermatitis present.

There is also evidence that cholesterol and like bodies are excreted to the surface and then reabsorbed after modification. This process is interfered with at an inflamed site, thus indicating a difference with respect to penetration between normal and pathologic skin and mucous membrane.

Prout, Eddleman, and Harris[29] used the official agar-cup-plate method to study silica gel as a carrier for antiseptics. The authors compared Pharmacopœial ointments of zinc oxide, ammoniated mercury, phenol, and boric acid with a silica gel-glycerin base. Expressed oil of almond, cottonseed oil, olive oil, liquid petrolatum, and castor oil containing the same medicaments were also tested.

Silica gel bases, in all instances except with ammoniated mercury, produced greater zones of inhibition than did the official ointments. The conclusion reached was that any factor which tends to influence the diffusion of medicament from the ointment base will affect the antiseptic property of the ointment.

Wood,[30] Gershenfeld and Brillhardt,[31] and Clark[32] all studied the antiseptic value of phenol and other antiseptic materials when incorporated

in various types of ointment bases. These investigators all used the agar plate test or some slight modification of it.

Gershenfeld[43] stated that transmission or absorption of the active agents contained in ointment bases is more important than absorption of the base itself.

Duemling[34] adopted a method similar to that of Eller and Wolff[35] for the study of permeability and absorbability of fats and melting agents into the skin. After the hair was removed from areas of the skin along each side of the spine of mature albino rabbits, test materials were applied on only one side. The other side was used as a control.

The materials applied to the skin of the rabbits were Duponol 1%; ferric chloride in aqueous solution 15%; ferric chloride 15% in aqueous solution of Aerosol OT dry; ferric chloride 15% in an ointment base containing wetting agents, equal parts of hydrous wool fat, petrolatum, spermaceti and cetyl alcohol; ammoniated mercury 5% in an ointment base containing a wetting agent.

In a second series of experiments Duemling used fats alone with wetting agents and without wetting agents. He then incorporated ammoniated mercury (5%) in fats with a wetting agent, and in an ointment base such as White Ointment, U. S. P.

The wetting power of the newer organic compounds is said to be due to the reduction of surface tension and the lowering of interfacial tension between the solid and the solvent, thus permitting rapid penetration and dispersion in the solid. Unusual emulsifying and detergent properties are inherent in the wetting agents. The results of the biopsies upon specimens of skin showed much more rapid penetration and greater depth of fatty substances with wetting agents.

## Unique Tests on Sulfonamides

One of the most interesting and perhaps unique methods used to study the effect of various media on the rate of absorption was that used by Fuller, Hawking, and Partridge.[36] Sulfanilamide, sulfapyridine, sulfathiazole, and sulfadiazine were used alone or incorporated in various media.

The sulfonamide preparation was placed in a Gooch crucible and the upper and lower surfaces were covered with a filter paper. The filter paper was moist and pressed down to exclude all air. The Gooch crucible was placed in a diffusion chamber surrounded by a thermostat which maintained the temperature at 37° C. By means of a capillary tube and a constant level device, a steady flow of water was maintained from the lower to the upper portion of the crucible and the surrounding chamber. The water was collected for periods of not less than an hour and determinations were carried out for quantity of sulfonamide.

During the first two hours diffusion of the sulfonamide varied considerably, then became steady. Using a preparation containing 30% sulfanilamide in hydrous wool fat, the following quantities of drug passed into the water, which flowed at the rate of 20 cc. per hour.

| | First Hour | Second Hour | Third Hour | Fourth Hour |
|---|---|---|---|---|
| Sample (*a*) | 1.9 mg. | 1.28 mg. | 0.86 mg. | 0.60 mg. |
| Sample (*b*) | 2.6 mg. | 1.32 mg. | 0.88 mg. | 0.64 mg. |

The proportion of total sulfanilamide diffusing into water in twenty-four hours from different bases was as follows: (1) 8%; (2) 7.8%; (3) 6.7%; (4) 8.4%; (5) 0.23%. No. 5 represents sulfanilamide wetted with water and incorporated in a w/o emulsion type base. Curves drawn showing the relationship between time and quantity of a sulfonamide that passed into water show a direct agreement with their solubility in water.

The authors claim that the above method approximates more closely than other tests the actual conditions met with *in vivo*. Static methods, such as diffusion from a solid compound into a stationary gel of agar or gelatin, yield useful information. But they do not take into account conditions when the passage of sulfonamide to the interface is interfered with by the presence of an oily base, or when the removal of sulfonamide on the aqueous side is accelerated by currents in the fluid concerned.

*In vivo* experiments in which the excretion of sulfonamide in the urine after application of 0.6 Gm. of the compound to a standard wound on rabbits gave results which were in satisfactory agreement with *in vitro* tests.

The general conclusions drawn from these experiments are: (1) In all cases only a small proportion of the total sulfonamide passed into the water from an ointment base, and the diffusion

took place from the surface layers. (2) Preparations miscible with water (a glycerin-gelatin jelly and an oil-in-water emulsion) liberated the drug much more readily than preparations immiscible with water. (3) Increase in particle size of the drug and preferential wetting with oil retarded diffusion. (4) Similar results were obtained when the rate of flow of the water was reduced from 20 cc. per hour to 5 cc. per hour.

## Tests on Human Skin

Pillsbury, Livingood, and Nichols[37] described a method for measuring antiseptic activity of ointments. The hands were scrubbed according to a standard technique for a given period. The number of bacteria removed was determined by plating a sample of the soapy solutions of rinsings and incubating for forty-eight hours. The number of colonies were counted.

The ointments studied were sterile white petrolatum; sterile wool fat; sterile simple ointment U. S. P. XII; ammoniated mercury ointment, 3 and 5% in petrolatum and an emulsion-type base containing a wetting agent; phenylmercuric nitrate 1:1500 (0.06%) in U. S. P. XII white ointment and in emulsion-type bases. After three or seven minutes of scrubbing had been carried out, 5 Gm. of the ointment or sterile base was rubbed on each hand and forearm to the level of the elbow for about fifteen seconds and allowed to remain on the skin for three minutes, thirty minutes or one hour. Application of the ointment was usually made after the seventh scrubbing when most of the "transient" bacteria had been removed from the skin.

Interruption of the scrubbings for the removal of "transient" bacteria or the application of sterile wool fat or sterile petrolatum for short periods produced an increase in bacterial count in subsequent washings. Ammoniated mercury and phenylmercuric nitrate in various bases showed no decided antiseptic action by this method.

Johnston and Lee[38] described a method of testing absorption from ointment bases using radioactive sodium chloride. The activated material was incorporated in various ointment bases such as anhydrous lanolin, petrolatum, and lard, and a hydrophilic base of the cholesterol type. One gram of the ointment was applied to the upper right arm and rubbed into the skin. At definite intervals each subject was tested for radioactivity by measuring the activity of the left hand. A Geiger counter was used with the counting tube shielded from the right arm by a housing of lead blocks 4 inches thick. Urine samples were collected at regular intervals, carefully evaporated to dryness and measured for activity.

Radioactivity was detected in all cases, whether the measurement was made on the hand or on the urine; however, more uniform results were obtained from the urine samples. The extent of absorbability of the radioactive particles was greatest from the hydrophilic base and lard. These two bases were very similar in this respect. Absorption from the cetyl alcohol base and petrolatum was less than from the lard and the hydrophilic base. Lanolin gave results which were more inconsistent than those of the other bases. No quantitative comparisons were made.

Moncorps[39] investigated the absorption of sulfur from various ointment bases and found least absorption from zinc paste; absorption was increased when an o/w emulsion, w/o emulsion and petrolatum or lard was used. The greatest absorption was from lard.

Strakosch[15, 40, 41, 42] carried out a series of experiments on the absorption and effect of sulfur, salicylic acid, chrysarobin, etc., when incorporated into various types of ointment bases. Zinc oxide paste was included in the studies.

## Keratolysis as Criterion

The experiments were carried out with different concentrations of the drug in various bases to determine the necessary concentration to produce keratolysis on the normal human skin and also the time necessary for its production. Six ointment bases were employed: (1) petrolatum; (2) petrolatum and hydrous wool fat in equal parts (w/o emulsion); (3) a base consisting of 6% esters of cholesterol (chiefly oxycholesterol); (4) a base containing fatty acid esters of diethanolamine mixed with petrolatum; (5) a stearyl alcohol base with liquid and solid petrolatum; (6) a zinc oxide paste. Biopsies were performed after one, two, three, seven, ten, and fourteen days.

Under the conditions of the tests it was found that salicylic acid produces a keratolytic effect in a shorter time when it is employed in an emulsion base than when it is incorporated in petrolatum or in a zinc paste. The best keratolytic effect when sulfur was used occurred when

incorporated in petrolatum. The keratoplastic action was better and occurred sooner in lower concentrations when the sulfur was incorporated in emulsion bases. The type of emulsion seemed irrelevant. In the case of chrysarobin, it was found that the reactions were more severe when petrolatum was used as a base and that it made no difference whether an emulsion base or zinc oxide base was used.

Beutner[43] and co-workers compared cutaneous application of methyl salicylate with oral administration of acetylsalicylic acid. The methyl salicylate was applied in three different forms: (1) anhydrous lanolin, (2) anhydrous lanolin with menthol, (3) a glyceryl monostearate emulsion. Twenty per cent methyl salicylate was used in all cases. According to these authors cutaneous application of methyl salicylate produces a systemic action as well as the usual counterirritant effect.

## Summary

A review of the literature pertaining to the methods used to measure penetrability and absorbability of drugs and chemicals from various types of ointment bases has been presented. An analysis of the material reveals that:

1. There is a definite interest on the part of dermatologists in a rational basis upon which to select the most effective ointment base. This may also alter the desirable concentration of active ingredient.

2. There is a wide variety of methods in use for measuring the level of penetration, degree of absorption, and medicinal action of drugs contained in various vehicles.

3. A real need exists for some standard technique for determining the level of penetration and degree of absorption of drugs and chemicals from preparations applied cutaneously.

4. While there exists no technique for determining penetration or absorption through pathologic skin as compared to normal cutaneous surfaces, the general procedures in use give valuable results.

5. There is still considerable confusion with respect to the extent of therapeutic activity of drugs and chemicals when incorporated into the several types of ointment vehicles.

6. There appears to be ample evidence that factors other than the ointment base or medicament play a part in the effect upon penetration and absorption through the human skin.

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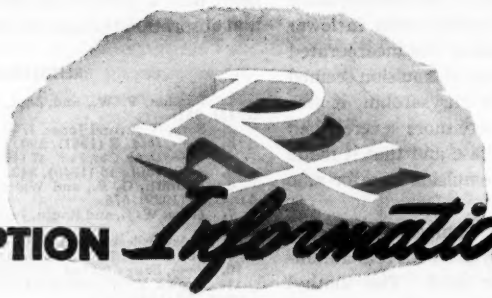


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## BUCKLEY'S ASTRINGENT

*Could you supply me with the formula for Buckley's Astringent (a dental preparation) and a description of the product? We have been unable to find this formula in any publication.—J. S., Colorado*

Buckley recommended the following formula under the title, "Pyorrhea Astringent:"

| | |
|---|---|
| Zinc phenolsulfonate | |
| Potassium iodide, *āā*..... | 1.3 Gm. |
| Iodine, crystals..... | 2.0 Gm. |
| Menthol..... | 0.19 Gm. |
| Thymol..... | 0.13 Gm. |
| Glycerine, *q. s. ad*..... | 30.0 cc. |

## ALCOHOL CONTENT TOO LOW

*I have a physician who wants a castor oil alcohol tonic on the order of a former brand no longer on the market. The proposed formula follows:*

| | |
|---|---|
| *Euresol*..... | ℥ i |
| *Castor oil*..... | ℥ iv |
| *Alcohol, grain, 70%, q. s.*..... | *f* ℥ vi |
| *Oil of bergamot* | |

*This mixture is cloudy. How can it be dispensed clear?—L. G., Pennsylvania*

Your preparation is cloudy because the alcohol concentration is too low. It takes at least 80% alcohol to dissolve castor oil. Euresol, on the other hand, is soluble in lower strength alcohol. To prepare a product more like the one you have in mind, eliminate the euresol and increase the castor oil to one ounce. Use a few minims of Tincture of Benzoin to neutralize the odor of castor oil and to prevent rancidity, and perfume as desired.

## TOXICITIES OF SOLVENTS

*I am interested in obtaining a compilation which gives the toxicities of solvents.—F. M., New Jersey*

To our knowledge there has been no published compilation of references on the toxicities of solvents. In conducting a search of the literature, however, we believe that the *Journal of Industrial Hygiene and Toxicology* would be most productive. For example, E. G. Laug of the Food and Drug Administration published a paper on the toxicity of glycols and their derivatives in the above journal, 21:173, 1939. Henry Ṣmith has also published several papers in this publication on related subjects.

Two books pertaining primarily to industrial solvents, but which should contain much material of interest to you pharmaceutically, are as follows: "Toxicity and Hygiene of Industrial Ṣolvents" by Lehman and Flury (translated by King and Ṣmyth), Williams and Wilkins, Baltimore, 1943; and "Toxicity of Industrial Organic Ṣolvents" compiled by Browning, His Majesty's Ṣtationery Office, London.

## BENZYL BENZOATE SOURCES

*Can you tell me who makes benzyl benzoate, the scabicide?—O. H., Missouri*

Ṣome of the suppliers of benzyl benzoate are: Merck and Company, Inc., Rahway, N. J.; Ṣeydel

Chemical Company, 225 Mercer Street, Jersey City 2, N. J.; Givaudan-Delawanna, Inc., 330 W. 42nd Street, New York 18, N. Y.; and General Drug Company, 644 Pacific Street, Brooklyn, N. Y.

## ALKALI EFFECT ON VITAMIN C

*Would a daily dose of Milk of Magnesia have any effect on the vitamin content of ingested food, such as vitamin C which is supposed to be destroyed by alkali? —J. M., Kentucky*

It is our impression that Milk of Magnesia would have no effect on the vitamin C content of ingested foods. The destruction of vitamin C is hastened in the presence of alkali but this destruction is an oxidation and not a hydrolysis. Consequently, we believe that there would be very little destruction of the vitamin under physiological conditions in the presence of Milk of Magnesia. In a container, however, aqueous solutions of vitamin C would be destroyed in the presence of this drug in a comparatively short time.

## IMPROVING PALATABILITY

*For several years I have been preparing syrup of ammonium mandelate by the same formula. Within the last two weeks I have had complaints from the physician that it is apparently not as palatable as it used to be. Please advise what the difficulty may be. The formula is as follows:*

| | |
|---|---|
| *Ammonium carbonate* | 80 |
| *Mandelic acid* | 200 |

*Dissolve in 400 cc. warm water, let effervescence subside.*

| | |
|---|---|
| *Add:* | |
| *Fldext. Glycyrrhiza* | 175 |
| *Saccharine soluble* | 1 |
| *Sucrose* | 400 |
| *Water, q. s. ad* | 1000 |

*The original formula called for anethol, benzaldehyde and oil of fennel. Not having all of them in stock when we first prepared this we have omitted them ever since.—A. S., Kansas*

The only possibility we see in the formula which might result in a change in flavor would be that the ammonium carbonate may have been somewhat aged and changed to the bicarbonate. This, of course, would be shown by the amount of white powder appearing on the cubes and would result in not fully neutralizing the mandelic acid.

The only other explanation would be that the Fuidextract of Glycyrrhiza, which of course has no assay standard, might not have been as palatable or might not have had as much extractive as it normally carries. There is a possibility for considerable variation in the fluidextract, depending upon the handling at different stages of manufacture.

We note that you have never used the anethol, benzaldehyde and oil of fennel with this preparation. These additional oils would greatly increase the palatability of the syrup, making it a delightful preparation.

## WASHABLE OINTMENT BASE

*We would like a good formula for a washable ointment base, preferably the one that will be included in the new U. S. P.—G. C., Texas*

At this writing the exact formula to be included in U. S. P. XIII has not been announced. One which has received serious consideration is as follows:

| | |
|---|---|
| Stearyl alcohol | 25 Gm. |
| White petrolatum | 25 Gm. |
| Glycerin | 12 Gm. |
| Water | 37 Gm. |
| Sodium lauryl sulfate | 1 Gm. |

Melt the stearyl alcohol and white petrolatum on a water bath; stir gently. Warm to 75° C. and add with stirring to a solution of the glycerin, water and sodium lauryl sulfate which has been warmed to the same temperature. Stir until congealed.

Stearyl alcohol (Stenol) and sodium lauryl sulfate (Duponal C) are available from Du Pont de Nemours and Co., Wilmington 98, Del.

## BICARBONATE DIFFICULTIES

| | |
|---|---|
| *Sulfathiazole or sulfadiazine* | grs. 100 |
| *Sodium bicarbonate* | grs. 80 |
| *Syrup, q. s. ad* | fl. ℥ 11 |

*When we compound this we get effervescence for several hours. Have tried adding various substances without results. We want a mixture that can be dispensed without foaming and effervescence.*

*What green color could we get that would not fade? The alkalinity of the mixture fades the two or three colors we have.—C. W., Texas*

Your problem of hastening the completion of effervescence in your prescription of sulfathiazole, sodium bicarbonate and syrup could be solved by making the original solution of the two salts in water, allowing the effervescence to take place in this medium, and then add sufficient sugar to make the syrup. When the prescription is filled as written, using syrup, the body of the prescription retards the elimination of carbon dioxide.

On the other hand, we can see no reason for using sulfathiazole itself to make the sodium salt. We would suggest that the sulfathiazole be replaced with an equivalent amount of sodium sulfathiazole, namely 114 grs., and to this be added 47 grs. of sodium bicarbonate, which is the excess bicarbonate

represented over and above that required to change the sulfathiazole to the sodium salt. This should eliminate all effervescence. We further call attention, however, to the fact that sodium sulfathiazole, whether it is used as such or made extemporaneously, is rather unstable in aqueous solution. Accordingly, this prescription should not be prepared to last indefinitely.

To provide a green color the dye designated as "D & C Green #5" should be reasonably permanent in an alkaline medium of this type. This dye is manufactured by the National Aniline Division of the Allied Chemical and Dye Corporation, and possibly other firms, but is available direct in not less than 1-lb. lots. If your wholesaler cannot supply you, we understand that the dye can be obtained in small quantities from the Interstate Color Company, 5 Beekman Street, New York, N. Y.

## RELATED TO AMINOPYRINE

*My brother, a physician, has written me for information concerning dimethylaminophenolmethylpyrozone. This substance is one of the ingredients of a foreign asthma remedy. Any information concerning it will be greatly appreciated.—H. P., North Carolina*

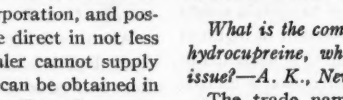
We have been unable to locate a reference in the literature concerning the use of dimethylaminophenolmethylpyrozone. There is also no "pyrozone" or "pyrazone" ring listed, but the latter name is sometimes used in place of "pyrazolon" in the foreign literature. Chemically, aminopyrine is dimethylaminophenyldimethylpyrazolon, and antipyrine is phenyldimethylpyrazolon. Accordingly, we believe that the compound mentioned in your letter is either the familiar aminopyrine or some closely related compound, both chemically and physiologically.

## ISO-OCTYL-HYDROCUPREINE

*What is the common name and source of iso-octyl-hydrocupreine, which was mentioned in your May issue?—A. K., New York*

The trade name for iso-octyl-hydrocupreine is Vuzin and is usually supplied as the dihydrochloride. It may be obtained from Rare Chemicals, Inc., Union Building, Plainfield, N. J.

The drug is a synthetic base marketed as a white crystalline powder having powerful bactericidal action on gram-positive organisms. It is dispensed in freshly prepared aqueous solutions made with distilled water, and usually sterilized. The concentrations given in Gutman are from 1:500 to 1:10,000, depending upon the indication. Solutions of iso-octyl-hydrocupreine are acid in reaction and must not be prepared with any alkaline substances.



# NEW APPEAL MADE FOR STUDENT DEFERMENT

MEN in the Army and Navy or those just discharged who had previously been premedical and predental students have been urged by the War Manpower Commission to complete their preprofessional education and thus avoid a later shortage of eligible medical and dental students.

In response to queries as to why pharmacy students were omitted from the War Manpower Commission's suggestion, Dr. Robert P. Fischelis, A. PH. A. secretary, explains that the request for release and deferment of pharmacy students has been handled through the American Council on Education and the National Research Council, which are working jointly on the program of training for the scientific professions.

The position of this group has been brought to the attention of President Truman through Director John W. Snyder of the Office of War Mobilization and Reconversion. His statement included information on the need for pharmacy student deferments, which had been submitted by the American Council on Education and supplemented by a direct communication from the secretary of the AMERICAN PHARMACEUTICAL ASSOCIATION.

Action in respect to deferment of pharmacy students is expected to depend largely on what method Congress evolves to secure replacements for occupation forces. In view of the urgent need for professional and scientific men, Dr. Fischelis states that the next step is a direct appeal to Congress, in the form of a proposed law, if nothing is accomplished by executive order or administrative action. Public hearings will then be held, and science and the professions can lay their case before the public. The AMERICAN PHARMACEUTICAL ASSOCIATION is continuing to work with other scientific and professional societies in an endeavor to meet the situation adequately.

## PROPOSALS OF PRESIDENT WOULD AFFECT PHARMACY

President Truman's message to Congress included recommendations on research, Selective Service, stockpiling and medical care which are of direct interest to pharmacy in its professional, scientific or social aspects, A. PH. A. Secretary Robert P. Fischelis points out.

"The President's recommendation that Congress establish a single Federal research agency is sound and in harmony with the thinking of scientists who joined various divisions of the Federal government to promote the scientific research and development required in the war effort," said Dr. Fischelis.

"His proposal that research in medicine, public health and allied fields be promoted and supported will raise the question as to how far the government should go in the development of drugs and medicines. But we cannot afford to lose sight of the fact that in the production, distribution and proper use of drugs, such as penicillin, unusually swift headway was made by the coordination of industrial and governmental research facilities."

It seems apparent from the President's message that he believes every able bodied young man should have a maximum of two years of military training. This raises the question, Dr. Fischelis observed, as to how college courses should be arranged to enable those reaching their eighteenth birthday, while attending college, to lose as little as possible in time or in acquired knowledge and skill.

"It is clear that educators at the college level must give this problem very careful consideration," the A. PH. A. secretary continued, "and we may have to devise new procedures for coordinating military service with scientific and professional training."

President Truman also told Congress that he will shortly recommend a national health program to provide adequate medical care for all Americans to protect them from financial loss and hardships resulting from illness and accident.

"This should be sufficient notice to the professions engaged in supplying medical care to continue their studies of this highly important and controversial subject," Dr. Fischelis said. "Unless constructive suggestions are forthcoming from the professions, it must be expected that legislation will be enacted without their assistance."

## Typical Days

**From the Secretary's Diary for August**

—1ST—

THESE days the mail brings many tales of non-pharmaceutical activities of pharmacists in the Army, Navy, Marines, Air Corps and Coast Guard; also encouraging letters from life members and others who seem to be impressed with what is going on at A. PH. A. headquarters. Among these a most gracious missive from G. A. Pfeiffer. New life members include President Lescohier of P. D. & Co., R. Lincoln McNeill of Robert McNeill & Co., Earl Means, now a man of leisure, Ferdinand Stoll, late of Louisville but since the war doing a fine job at Army Supply Depot in New York City.

We also welcome among the new annual members Carleton Palmer, Squibb Board chairman; Gerald F. Rorer, A. Ph. M. A. president; Fred Misch and Fred A. Lawson, who are A. Ph. M. A. officers. These and many others bring the new member count up to 1950 for the year so far.

—2ND—

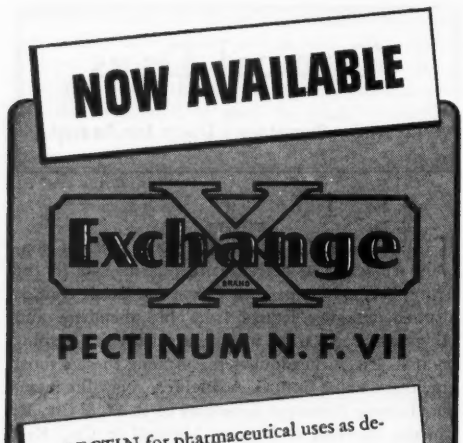
Many a long distance call to interrupt the daily grind and mostly to clear up interpretations of government regulations and suggest men for jobs and jobs for men. Also a new experience with banks in trying to open a petty cash account. One would think that money will be so plentiful forever that even bankers are not interested in it.

—3RD—

Received today some of the dog-eared reference books and pamphlets found so useful in Trenton and missed so greatly in Washington. There is nothing like your own library to help recall that which was true even though a fast-moving world finds it no longer so.

—6TH—

Today a periodic meeting of the junior staff, made up mostly of the alleged weaker sex, but there is nothing weak about our editorial, secretarial, stenographic and clerical contingent who save the "brain trust" many an unnecessary step and turn out good clean copy for the publications and catch the errors that often escape the male eye. And they are gifted with that saintly patience so necessary to untangle subscription and membership snarls occasioned by careless listings, improper addressing, insufficient searching and failure to notify of changes in address, etc., etc. They could often write letters appropriate to the occasion, but way back in the dim and distant prewar days someone said "the customer is always right." And we haven't forgotten that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entirely, so reconversion will not be too difficult here.

During the afternoon a visit from Louise Schmitz of WPB and Dr. Gertrude Horn, a Burroughs Wellcome research chemist. To dinner with John McPherrin, the erudite and "jut-jawed" (*Time* magazine) editor of *American Druggist* who is always a stimulating adversary or partner in an argument on what constitutes pharmacy and who is a pharmacist.

—7TH—

Much of the morning spent with the architect who thoroughly inspected our whole plant and reviewed our requirements. After eleven years he finds the building settled with remarkably little damage of the kind usually expected. But there is much need for pointing and painting and routine repairing, for all of which we hope there will be contributions from interested benefactors. At lunch with Louis Busse, on leave from Wisconsin University faculty, who came to help us at WPB and who did it well; now ready to return to his teaching duties, wiser, we hope, but not sadder, for his experience; with him came Lloyd M. Parks whose Army Chemical Warfare days have neared a close and who too is Wisconsin U. bound.

—8TH—

At lunch with Dr. R. C. Williams of U. S. Public Health Service to discuss many phases of our survey of pharmacy and later a staff meeting at which there was spirited discussion of many routine problems and plans for greater efficiency in our work.

—9TH—

During the day a telephone chat with President Moulton who has accepted an invitation to address the pharmacists of Puerto Rico and requires air priorities for his trip. At dinner with Lt. Col. Noh, a pharmacist who has done a magnificent piece of work for the Surgeon General's office as head of medical supply purchases. Later to hear President Truman tell of plans to bring the war to a speedy end.

—10TH—

A pleasant chat with Congressional Representative J. T. Pinero of Puerto Rico at the House Office Building, learning much of that Territory's health problems, which was passed on to President Moulton. All afternoon at the Army Surgeon General's office with a great array of talent from industry and government to explore the production facilities for streptomycin which may out-wonder the wonder drug penicillin. Later to bid farewell at a cocktail party (tomato juice included) to Dr. W. Y. Elliott, vice-chairman of WPB for Civilian Requirements, who leaves for Moscow shortly on another government mission. Here is a Harvard professor who can hold his own in any company of industrialists and who could wangle more than crumbs of materials for civilians from hard-boiled Army custodians of hoarded supplies. It was a pleasure and an education to serve under him.

—13TH—

To New York this morning with N. J. Ph. A. Secretary John Debus to attend the Eastern States Conference of Pharmaceutical Association Secretaries and found among those present Rhode Island's James Deery, Massachusetts' Frank East, Pennsylvania's Chauncey Rickard, Vermont's Mabel Clifford, and New York's Nicholas Gesoalde. These secretaries know what the score is and we all got much out of a few hours matching of wits and exchange of ideas. Returned to Washington in time to sign and dispose of the mail before the last collection at midnight.

—14TH—

A difficult day to get the office routine under way because of many false rumors of Japanese capitulation and everybody expecting the word momentarily. At 4:00 p. m. on the Congressional Limited for Philadelphia to arrive in time for a 6:30 meeting of the American Council on Pharmaceutical Education. While dining with Beal, Costello, DuMez, Taylor, Little and Swain at the Bellevue Stratford

Hotel there came President Truman's voice over the air to announce that the Japanese had finally accepted the Potsdam terms of unconditional surrender. There was a spontaneous shout from all who were assembled followed by rigid standing at attention while the national anthem was played. After that, there was remarkably little excitement until one reached the street level where staid Philadelphians gave vent to their feelings in plenty of bedlam that even caused the Council on Pharmaceutical Education to recess until 9:00 p. m. in order to watch the impromptu celebration around Philadelphia's City Hall.

After that, three hours of solid work on the problems of pharmaceutical education interrupted occasionally by hilarious sailors who navigated up and down the hotel corridors and could not understand how anybody could appear to be working at a time like this. At midnight, with part of the agenda disposed of but with the victory celebration outside still far from complete, we sought a few hours of sleep amid the all-night noise. The idea of the grand unscrambling of the vast war organization leaves us with much serious thought of the days ahead.

—15TH—

Continuation of the meeting of the American Council on Pharmaceutical Education with deep concern for the changing factors that will influence curricula and teaching in the postwar era. It seems that all of the restaurants were taking part in the second day of victory celebration for it was difficult to locate a place that would serve either breakfast or lunch.

With brief attention to the mid-day hunger, there followed the A.C.P.E. at one o'clock a meeting of the Steering Committee of the Committee on Status of Pharmacists in the Government Service, participated in by Einbeck, Kendig, Swain, Frates and others with planning until 5:30 for the next steps in making the Pharmacy Corps a more effective arm of the military service.

Then to dinner with the Joint Committee of the American Social Hygiene Association and the A. PH. A. at which DuMez, Kurtzhals and Miller joined us in reviewing the year's progress and projecting plans for the next Social Hygiene Day which comes on February 6, all of which was finished in time to catch the 8:10 p. m. train for Washington, riding with DuMez as far as Baltimore and discussing many problems. Arrived in Washington at 10:30 to end V-J Day 1.

—16TH—

Early to the office and enjoyed the second V-J holiday almost in solitude but able to accomplish much because of an unusually quiet telephone. A welcome guest at luncheon with Dr. Powers was Dr. Richard Deno, Rutgers professor on leave and now a captain in the Sanitary Corps, just returned from the South Pacific theater of war on a furlough. Both Rutgers and the N. F. Committee are hopeful that it will be unnecessary for him to take the long trip back before returning to civilian tasks.

This day also marked the birth of Stuart Bruce Sonnedecker, the first addition to the PRACTICAL PHARMACY editor's family, and daddy was ready with the cigars and candy for the staff.

—18TH—

An interesting conference with Dr. Felix and Pharmacist Kinsey of the U. S. Public Health Service in which Drs. Powers and Green joined to discuss barbiturate addiction and what to do to make U. S. Public Health Service hospitals available for treatment.

Later to the Academy of Sciences to confer with George D. Meid on problems of mutual interest involving maintenance and personnel. After a quick lunch, to WPB to contribute slightly to the history of the Division of Chemicals, Drugs and Health Supplies which must now be written so that the archives may be complete, and then to the train for a short week end at home.

—19TH—

The routine tasks of the day interspersed with many a conference with architect Malcolm Rice, Selective Service, War Manpower Commission F. D. A. and Narcotic Bureau. To lunch at the

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Roger-Smith with Captain Huellmantel who represents Surgeon General Kirk of the Army on our Committee on War Activities and Veterans' Affairs and who knows his way around.

—21ST—

After disposal of the early mail came Captain Huellmantel and Lt. Col. Duryee to inspect our building and found them much pleased with what they saw. With Dr. Powers and the military men to the National Research Council for a meeting of the Sub-Committee on Pharmacy which has about completed its advisory work on the revision of the Army Pharmacy Manual and it is a good job with Deans Newton and Griffith contributing handsomely. At 3 o'clock a visit from Chancellor Jaime Benitez of the University of Puerto Rico who is looking for several good pharmacy teachers and has excellent plans for the development of the College of Pharmacy which he expounded to us in the presence of Dean Newton of the Massachusetts College of Pharmacy.

—23RD—

Much long distance telephoning in connection with the postwar status of pharmacists and pharmacy. Among the visitors of the day was Wave Ensign Catherine Simon from Colorado who is planning for refresher courses before resuming the civilian practice of pharmacy. A final telephone conversation with President Moulton prior to his air trip to Puerto Rico, and later to attend a farewell party for George Hamill who succeeded us as the Division director for chemicals, drugs and health supplies in WPB and now goes to the Surplus Property Board to supervise disposal of chemical plants.

—24TH—

The morning routine interrupted by a visit from another Colorado Wave Ensign, Louise Hoffman, who has been busy at the Naval powder factory at Indian Head, Md., during these war years and is ready to go back to hospital pharmacy after refresher courses. And it seems the Navy has picked some good talent from among our pharmacy graduates and put them to work at other specialties. Our colleges of pharmacy will find it no easy task to satisfy the G. I. craving for graduate and refresher education from what we have been able to gather in interviews thus far.


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### JOSEPH L. ROSIN NAMED MEDALIST

**Joseph L. Rosin of Rahway, N. J., for many years executive vice-president and chemical director of Merck and Company, has been awarded the Remington Medal for 1945, the New York branch of the American Pharmaceutical Association has just announced.**

**Mr. Rosin becomes the twenty-fourth Remington medalist, the honor being conferred annually upon the person whose work during the year or over a period of years is judged most important to pharmacy. Further details of the award will follow in the next issue.**

## A. P. WYSS APPOINTED DEAN

Dr. Arthur P. Wyss, formerly of the University of Buffalo School of Pharmacy, has accepted the post of dean at the Western Reserve School of Pharmacy in Cleveland. Dr. Wyss has been active in the AMERICAN PHARMACEUTICAL ASSOCIATION and is currently secretary of the Section on Practical Pharmacy and president of the Western New York branch.

He succeeds Dr. F. J. Bacon, professor of botany and pharmacognosy, who accepted the temporary appointment as dean last year.

## ARMY STUDIES STREPTOMYCIN

"Streptomycin shows possibilities which may prove to be as important to the medical profession as the discovery of penicillin," according to a statement from the Office of the Surgeon General announcing an investigative program for this new antibiotic by the Army Medical Department.

Streptomycin is effective against gram-negative bacteria which are not susceptible to penicillin. Because of limited production and lack of clinical data, the drug may not be generally available for some time.


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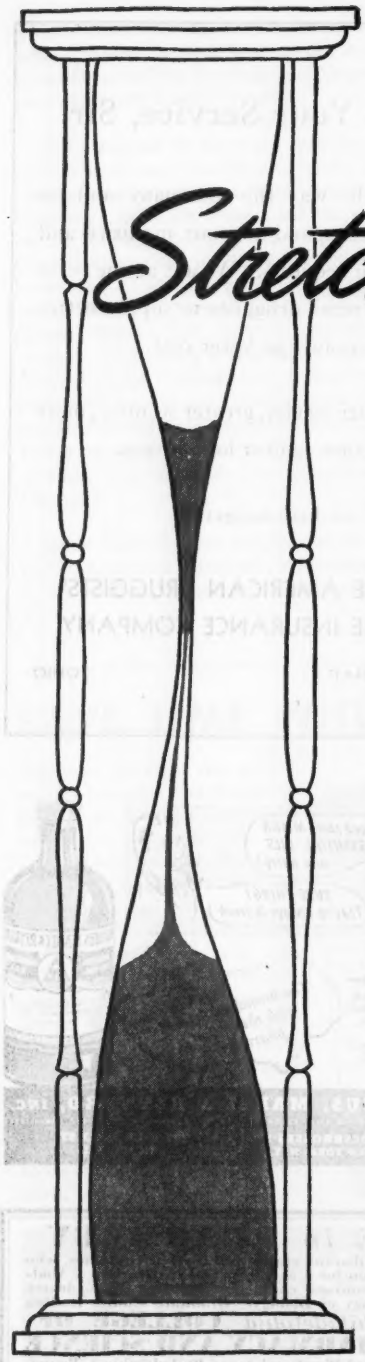

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